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American Railroad Journal.

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Saturday, November 10, 1849.

Mackinaw, November 2, 1849.

The season for navigation on the lakes now drawing to a close, an opportunity is affored of estimating the results of the working of the Lake Superior mines for the last twelve months.

These results, prepared by a consultation among the several directors and agents of the mines now detained at this place, waiting for a boat for Detroit, we present in the table below. In the percentage column a greater yield, it will be seen, is allowed to the products shipped from the Minesota, North West and Copper Falls, than from the Cliff mine and N. American. The explanation of this is, that those of the former consist only of masses of copper and lumps small enough to be packed in barrels, the poorer ore, (stamp work,) remaining on hand until stamps are put in operation to separate the greater portion of the stone from the fine copper. The products of the stamps bring down considerably the per centage of all the materials shipped. The masses, besides, from the Minesota were either obtained or made more free from adhering stone than those from the Cliff mine generally.

Statistics of Lake Superior Mines for the year 1849.

Name of Mine.	Copper shipped to Nov. 1. Tons.	Waiting shipment. Tons.	Total tons.	Consisting of: Mass copper Tons.	Bbl. copper Tons.	Product of stamps	Probable average per centage.	Stamp ore on hand. Tons.	Will probably produce for the yr. 1850, tons
Cliff.....	940	60	1000	550	225	none.	63	700	350
Minesota.....	52	5	57	57	7	none.	75	700	350
N. American.....	30	5	35	18	7	5	67	1000	350
N. West.....	20	5	25	18	7	none.	67	300	250
Copper Falls.....	9		9			none.	67	200	uncert'n
Lac la Belle.....	10		10	Sulphuret of copper				none.	
Ohio and Isle Royale...	6		6	Pig copper			100		
Pittsburg and Isle Royale									
Siskowit.....									1000

In addition to the above a number of other mines are expected to add considerably to the production of the succeeding year. Several companies have been re-organised, and have this fall re-commenced operations, that had been interrupted during the past year or two; and a few additions it is expected will be made to the number of these the next spring. Some new companies also have been formed, and tracts secured, upon which parties will be employed another season.

The following table contains the names of these, some of which will certainly give employment to a large number of men another year; but though there is no doubt that among their number several will eventually be found highly productive, the necessary surface work about mines new or comparatively so, will prevent their furnishing large returns the next season. Should they raise the amount of copper shipped up to the close of navigation next year to double the amount of this year, they will do better than can reasonably be expected of them.

Ohio Trap Rock.
Forest.
Ontanagon of Detroit.
Ridge.
Adventure.
Aztec.
Indiana.
Douglass Houghton.
Algonquin.
Quincy.
Forsyth.
Albion.
Phœnix, (late Lake Superior.)
Sec. 23, T. 58, R. 31.
North Western.
Sec. 14, T. 58, R. 29.
Cape, (Sec. 7, T. 58, R. 28.)

The mines now in operation are left well provided with winter supplies, these having been sent up for the most part in good season, and with little loss. The experience of former years has taught companies the impolicy of deferring their shipment until the last boats, when in case of accident the supplies cannot be replaced, except with great hazard and expense. The improvement of the lands adjoining many of the mines has furnished these mines with hay, potatoes, turnips and some oats, all of which are produced with the greatest luxurience on the excellent soil of this region. On the Ontanagon particularly, the crops have been remarkably fine, potatoes, turnips, cabbages, onions, and other garden vegetables, attaining a size and excellence rarely seen in the longer cultivated fields of better settled portions of the country. The amount of land to be put in cultivation in this district another year will probably render it altogether independent of other sources for supplies ot these important articles. Many entries of land have been made within a few weeks, a large portion of which along the Ontanagon river can be only for agricultural purposes; though we cannot but fear, that as it is taken in a large body, it may longer be held unimproved, than if divided into smaller portions among actual settlers. Mining tracts entered also near the head

waters of the East branch of this river guaranty a ready and convenient market to the produce that may be raised on these lands. The townships south of the 5th correction line, not yet being in the market, are as yet neglected, except by those holding leases upon them: for the government do not recognise any pre-emption rights to the mineral tracts of these, and parties care not to make any developments upon them, when they have no mode of securing their discoveries. On Keewena Point three new mining tracts (a quarter section each) have been entered the present week at a cost of five dollars per acre. The opening and working of these mines will probably add considerably to the business of this portion of the country.

In the iron region also tracts of land of considerable extent have been secured, a portion for mining purposes, some for the supplies of fuel to the bloomeries, and some for cultivation. This district is the farthest east of the present three principal centres of operations, being only about a hundred and forty miles west of the Falls of the St. Mary, the outlet of the lake. The Keewena Point district is about two hundred and twenty-five miles from Sault Ste. Marie, and the Ontanagon district eighty miles farther. This iron region, of which we shall have more particular accounts to give hereafter, is about the head of Carp and Dead rivers. Its geological formations are different from those of the copper region, consisting of slates, talcose and micaceous, and quartz rock. In its vicinity limestone also is found, which hereafter will prove of great importance to the whole lake country, as this rock is not known about the copper mines, except a narrow strip of it too far in the interior to be of any present practical consequence. The small quantity of lime now used at the mines is brought from below the Sault, and sells for three dollars per barrel. Clay suitable for the manufacture of brick is also abundant here—a scarce article on Keewena Point, where it is sold for one dollar per barrel to the mining companies to be used for tamping in wet holes. There is no want of it on the Ontanagon.

The improved prospects of the mining business of the lake country have attracted the attention of those interested in the navigation of the lakes; and there is good reason to anticipate increased facilities the next year for the transportation of supplies.—On the upper lake there have been two excellent propellers, owned equally by Messrs. J. R. Livingston, Thomas Clark, & P. B. Barbeau, which run in connection with the steamboat Franklin and freighting vessels of S. McKnight, Esq., completing the route to Detroit. The propellers have successfully accomplished their part of the freighting business, but they need the regular support of the transportation of the mails, conferred by the post office department to ensure the regularity of their trips, and their stopping for passengers at the different ports on the lake The steamboat Franklin lost no trip from the 1st May to the 1st October; on this trip she encountered a heavy storm on lake Huron, and was compelled to throw over a part of her cargo. She is still running and will probably make two more trips before the close of navigation. The freighting business between the Sault and Detroit has never been conducted better than it has been this season, under the energetic direction of Mr. McKnight; and we are gratified to learn that this gentleman is making arrangements for running next year a finer boat than the Franklin, and a large propeller on this route; may he have all the success his enterprise merits.

H.

TRANSLATION FROM *Traite de la Fabrication du Fer*, BY M. B. VALERIUS. Published at Brussels, 1843.*

Section III.—OF THE FURNACES.

Chapter 1.—*Reverberatory Furnaces.*

Article 3.—*Gas Furnaces.*

Page 85.—*Advantages of Gaseous Combustibles.*

Historical Notice.—The question now attracting much attention among iron masters is the use of the waste gas of the blast furnace for heating reverberatory furnaces, and the substitution of gaseous for solid combustibles. The former have this advantage over the latter, that they develop instantaneously the temperature which corresponds to their calorific power, which admits of a greater heat being obtained, and one more easily controlled. With gaseous combustibles it is easy to produce either an oxidation, or a reduction, or a simple elevation of temperature without oxidation or reduction.

They are also more economical than solid combustibles, because there is less heat lost. In using them, the temperature of combustion can be easily controlled, it being necessary for this only to alter the temperature of the atmospheric air introduced by the tweres, and the depth at which the gas is taken from the blast furnace. In ordinary furnaces this cannot be accomplished so easily. But it is often important to develop the very highest possible temperature. For it is evident that the heating or melting of iron in a reverberatory furnace can be accomplished with a rapidity and economy greater in proportion as the temperature of the furnace exceeds the required temperature of the iron. The quantity of heat used, or rather that which is absorbed from the current of gas by the matter to be heated will be, ceteris paribus, greater in proportion as the difference between the two temperatures is greater.

The metallurgists, who have made the most progress toward the solution of the proposed question, are Messrs. Bunsen and Faber du Faur in Germany, and M. Ebelman in France. The latter, and M. Bunsen have studied it theoretically, the other has devoted himself to its application in practise.—Though the plans tried or proposed as yet are scarcely more than experiments, their bearing upon the future state of the art entitles them to description.

I will qucte the calculations published by M Ebelman in the Annales des Mines, 3d series, vol. 20, p. 229; as well as the process of M. Faber du Faur from its description by M. A. Delesse in the Annales des Mines, 4th series, vol. 1, p. 433. I will also give the translation of a paper by M. F. du F., upon the construction of gas furnaces, and the method of working them.

86. *Gas from Blast Furnaces—Calculations of M. Ebelman.*—After having determined by numerous experiments the composition of the gas of the blast furnaces, taken at various heights, M. Ebelman calculates, 1st, The total quantity of heat which the combustion of the gas taken at different heights would afford. 2d, The volume of air necessary in each case for the combustion of the gas. 3d. The maximum temperature generated by such combustion. We give the calculations made from the blast furnace of Clerval (Doubs), supposing the gas taken from the level of the tunnel head.

This furnace is cold blast and uses charcoal.—The charge containing 253·61 lbs. of charcoal, passes on an average in 53 minutes, and produces 175·24 lbs. of pig iron, or 4496·96 lbs. per day.

The charcoal contains eight per cent. of moisture.

* The above translation was furnished me by the kindness of Charles E. Smith, Esq., late manager of the Troy Rolling Mill. H.

After this is driven off at a temperature of 284° Fahrenheit its composition is—

Carbon	88
Hydrogen	1
Oxygen	6
Ashes	3
Total	100

So that 253·61 lbs. of charcoal employed are equal to 234·77 lbs. of dry coal, and contain 205·54 lbs. of carbon. The carbon in the pig iron is equal to 7·4 per cent. of the whole carbon which enters in the charge.

The temperature of the air is 356° Fahrenheit. The diameter of the twere is 2·56 inches. The pressure gauge stands at 0·71 inches, and the barometer at 29·21 inches.

One hundred volumes of gas from the tunnel head, supposing it to be free from moisture, contains

Carbonic acid	12·88
Carbonic oxide	23·51
Hydrogen	5·82
Nitrogen	57·79
Total	100·00

The gas also contains 11·9 per cent. of the vapor of water.

With these data it is calculated that 100 volumes of nitrogen in the dry gas correspond to 31·5 volumes of the vapor of carbon, or—deducting the 7·4 volumes absorbed by the iron—to 29·2 of carbon of the coal introduced. Consequently 100 of nitrogen by weight correspond to 24·9 of carbon of the coal.

For 205·54 lbs. of carbon consumed per charge, there is introduced into the furnace 825·5 lbs. of nitrogen, or 1072·07 lbs. of atmospheric air. Of air 20·21 lbs. are introduced per minute—equal to 249 ·33 cubic feet (7·06 cubic metres). The volume of air really delivered in the same time by the twere is 8·76 cubic metres—equal to 309·37 cubic feet according to the following formula.

$$V^{0\cdot76} = \frac{60\cdot289\, d^2 \sqrt{h}\,(b+h)}{0\cdot76\,\sqrt{1+0\cdot004\,t}} = \frac{\cdot2556\,\sqrt{\cdot018(\cdot742+\cdot018)}}{0\cdot76\,\sqrt{1+0\cdot004\times180}}\, V^{0\cdot76} = 0299052$$

In which V 0·76 = the vol. of air at 0° Cente = 32° F. and at ·76 metres Barom = 29·92 in.

d = diameter of the twere ·065 m. = 2.56 in.

h = height of pressuie gauge ·018m. = 0·71 in.

t = tempefature of blast 180° Cente = 356 F.

b = pressure of the air at the moment of the experiment 7·42m = 29·21 inches.

Hence the loss of air per minute is 1·7 cubic metre = 60·04 cubic feet. This might be saved by closing the space between the blow pipe nozzle and the water twere with clay—("blowing with close tweres.")

The volume of gas coming from the furnace per minute is found by the proportion—as 79·2, the vol. of nitrogen in 100 of atmospheric air, is to 57·79, the vol. of nitrogen in 100 of dry gas from the tunnel head, so is x, the quantity sought, to 7·06 cub. met., the vol. of air introduced into the furnace: whence x = 9 64 cub. met. = 340·45 cubic feet.

The total volume of gas, including the vapor of water is obtained by adding 11·90 per cent., which gives 10,796 cubic met.* = 381·28 cub. feet.

A litre of gas containing 23·51 per cent. of carbonic oxide and 5·82 per cent. of hydrogen—in all 29·33 per cent. of inflammable gas, produces by combustion ·918 calories,† and consumes ·147 litres of

*Apparently an error in the calculation for 10·787.

†A calorie is the amount of heat required to raise 1 kilogramme (2·205 lbs.) of water 1° Centigrade. C.E.S.

oxygen or ·705 litres of atmospheric air. The quantity of heat developed by the combustion of 964 cub. metres of dry gas would be 8849 6 calories.

The heat developed by the charcoal employed in the blast furnace is 14216 calories per minute—consequently, the heat of the combustion of the gas is 62·2 per cent of that of the charcoal employed.

To obtain the temperature of combustion the following calculation is made.

For one litre of dry gas which consumes 7·05 of atmospheric air, we have—

Gas used.	Products.	Vol. litres	Weight grains.	Product of the weight and specific heat.
1 litre dry gas, 1·000	Carbonic acid contained in the gas, ·1288	·364	·717	·000158
	Carbonic acid produced by combustion, ·2351			
Vapor of water ·119	Vapor of water in 1 litre of gas, ·119	·177	·143	·000121
	Vapor of water produced by combustion. ·058			
Air, ·705	Nitrogen in the gas, ·578	1·136	1·485	·000396
	Nitrogen in the air introduced ·558			
1·824		1·677		·000675

The temperature of combustion will be $\frac{918}{·675}$ = 1360° Centigrade = 2480° Fahrenheit. This number is a minimum, since it is obtained in supposing the initial temperature of the gas and that of the combining air equal to 0° Cente., 32° Fahr.

The melting point of cast iron, according to Pouillet, being 1200° Cente. (2192 Fahr.) it follows that this temperature can be produced by means of the gas from the tunnel head, especially if it be combined with hot air. Karsten regards the valuation of Pouillet as too low.

The puddling of 4496·96 lbs. of pig iron produced daily by the blast furnace of Clerval would require 4549·89 lbs. of coal, or 3·148 lbs. per minute, which corresponds to 8480 calories.

In the charcoal blast furnaces the oxygen of the air delivered by the twere is rapidly transformed into carbonic acid. By this means the high temperature is produced, which is required to melt the ore cemented in the upper part of the furnace. Carbonic acid in contact with charcoal at a high temperature passes into the state of carbonic oxide.—This causes a diminution of temperature, which limits the zone of maximum temperature or the zone of fusion to a distance not exceeding 8 to 12 inches above the twere. From this line to the top of the boshes the current of gas is principally composed of carbonic oxide and nitrogen. From the top of the boshes (or the widest part of the furnace) the proportion of carbonic acid gradually increases, until it rises to a point about half way from the boshes to the tunnel head, and from this it remains constant. At the same time the proportion of carbonic oxide diminishes, while that of hydrogen increases. It is in the upper part of the stack the vapor of water is disengaged. The quantity of this vapor in the gas taken from the furnace varies according to the time elapsed since the last charge. The specific heat of this vapor being considerable, its presence perceptibly diminishes the temperature produced by the combustion of the gas.

The complete transformation of the oxygen of the atmosphere into carbonic oxide appears to take place at a greater height, or farther from the twere, in a coke furnace than in a charcoal furnace. This conjecture is based upon an analysis of gas taken from a cupola at a depth of four inches below the tunnel head. Ebelman found in 100 parts of this gas—

Carbonic acid	11·91
Carbonic oxide	11·91
Hydrogen	·99
Nitrogen	75·19
	100·00

To be Continued.

Institution of Mechanical Engineers.

On the Expansive Action of Steam, and a New Construction of Expansion Valves for Condensing Steam Engines.

By W. Fairbairn, Esq.

Continued from page 690.

The expansive action of steam has been variously estimated by different writers, but all seem to agree in opinion that a considerable saving is effected by that process. It therefore becomes a question of importance in a community whose very existence almost depends upon the steam engine, how to work it advantageously, and at the least possible cost.—The great variety of schemes and forms which have been adopted for the attainment of these objects, have been exceedingly various, ingenious and interesting; and the investigation of the different theories and applications that have been submitted for public approval, would form an exceedingly attractive, if not useful, history of the various discoveries to which we are in a great measure indebted for the present improved construction of the steam engine.

The elastic force and expansive action of steam were well known to Watt, and some of his immediate contemporaries and successors, such as Smeaton, Cartwright, Wolf, Trevithick, and others; but the fears of explosion at that early period, and the difficulty of constructing vessels strong enough to contain high pressure steam, were probably the greatest drawbacks to its introduction. Wolf and Trevithick were probably among the first to grapple with the dangerous element; and the former, in order to economise fuel, introduced the double-cylinder engine, whereby a great saving was effected by increasing the pressure of steam in the boiler, and allowing it to pass from one cylinder to another of three or four times the capacity, by which its volume was expanded; and by these means a saving was effected, and an extra duty performed. If, for example, taking a double-cylinder engine, the high pressure cylinder being one fourth of the capacity of the cylinder from which the steam is condensed, there will be, for one cylinder full of steam, an expansion of four times its volume; this, of course, with a diminished pressure in the ratio of the capacities of the two cylinders. Comparing this with a similar process in a single cylinder equal in capacity to the two cylinders, and fitted with a well constructed apparatus, regulated so that only one-fifth of the contents of the cylinder (equal in capacity to the small cylinder on Wolf's plan) is filled with steam of equal density, and the remaining fourfifths (equal in capacity to the larger cylinder) is allowed for expansion, it is evident that the communication being thus suddenly cut off from the boiler after the piston has been urged through only one-fifth of the length of the stroke, the expansive force is then used in completing the remaining four-fifths of the stroke, and the result must be nearly the same as that obtained with the two cylinders on Wolf's plan. The advocates of Wolf's system, however, insist upon its superiority, not from the actual force given out (which is rather in favor of the single cylinder than the double, in consequence of increased condensation in the steam passage between the two cylinders), but from the superior action and greater regularity of motion which in the former case is produced. To some extent this is the case, but not to any appreciable amount, provided the fly-wheel is well proportioned to the pressure and power at which the engine is worked. In the double engines, which are now in common use, that is, when two single engines are coupled together with the cranks at right angles to one another, there is less occasion for a heavy fly-wheel, as the effect of a large expansion is less felt, if not effectually neutralized. The results, therefore, of the double-cylinder engine and the single engine, working at equal rates of expansion, are virtually the same as regards power and economy of fuel, if the comparison be not in favor of the single engine.

Having come to the conclusion, that the same duty can be performed by the single as by the compound engine, and considering the important advantage of simplicity in mechanical construction, in opposition to complexity, however ingeniously made, it becomes a question how to obtain an effective, as well as a simple process, for the attainment of that object.

The first attempt was by revolving tappets, which had been long in use; these being formed and regulated in such a manner as to cut off the steam at such a point of the stroke, as to give the exact quantity of expansion required. These tappets, to say the least, were from various reasons objectionable, as the weight of the vertical rods and the slowness of their motion, prevented them from producing the desired effect. The steam valves could, however, be fixed so as to cut off the steam at the required point of the piston's passage in the cylinder, but the motion is not effected with the velocity essential to an efficient process of expansive action. Other processes have been tried for working steam engines expansively, besides those already noticed, amongst them may be noticed the equilibrium valve, worked by double cams from the crank-shaft. This method is generally used and adapted to the marine and old engines, but its application is seldom of much value, unless the engines and boilers are capable of bearing a pressure of 15 lbs. to 20 lbs. on the square inch.

Another fault to which this description of valves is subject, is their distance from the steam ports into the cylinder, and the large quantity of steam which occupies the space between the cut-off valve and the working cylinder of the engine. To remedy these defects, and to apply a better system of expansion to the common condensing engines, the following apparatus and mode of working the valves was introduced:—

In giving a description of this effective and simple apparatus, it is but fair to state that the first idea of this invention was suggested by Robert Brownhill, at first imperfectly constructed, but since greatly modified and perfected by the author of the present paper.

In the construction of a steam engine, two important considerations present themselves—the attainment of a maximum force, and the minimum in the consumption of fuel; to acquire the first, it is requisite to form such an arrangement of the working parts, as to obtain the closest approximation to a perfect vacuum under and above the piston: and the other is accomplished by having as small an expenditure of steam as possible. These desiderata are to a great degree attained by the principle upon which these valves are constructed, and the way in which they are worked. In the drawings exhibited, each of the steam chests contains two double beat valves, also a shut-off valve and throttle valve; these valves constitute the whole of the openings by which the steam is admitted and returned from the cylinder; the valves next to the steam pipe are those by which the steam is admitted into the cylinder, and the valves by which the steam escapes from the cylinder to the condenser. All the four valves are of the same area and dimensions; but the steam valves are not lifted up so high as the exhaust valves for the reasons which are afterwards given. The double-beat valves of this construction, have certain proportionate areas, the upper portion being larger than the bottom in the ratio of 1.158 to 1.000. The object of this enlargement of the upper part of the valve being to give a preponderence to the pressure of the steam on the top side, in order to overcome the pressure of the packing in the stuffing-box which embraces the spindle, and to assist the gravitating force of the valve in its descent when liberated from the actuating cams.

The mode of working the valves is by the shafts and wheels deriving their motion from the crank-shaft. A vertical spindle, upon which two circular discs are fixed, passes through the steam-chests; and by its rotary motion, the cams, which are fixed upon

the discs, raise the valves as they pass under rollers which are connected to the valve spindles by cross-heads, and by these means the valves are retained open or shut for any definite period. The rollers are steadied by cross heads sliding upon the vertical guide rods at their outer ends, and sliding at their inner ends in vertical grooves in a centre boss, which is supported by guide arms.

To work this engine economically, much depends upon the pressure of the steam and the amount of expansion given to the valves; the usual practice is to work with steam at 15 lbs. on the square inch, and cut off at one-half the stroke, and expand the other half; but in other cases, when the engines and boilers are calculated to bear a high pressure of steam, say from 30 to 40 lbs. on the inch, the cams are formed so as to cut off the steam at ⅓ to ¼ of the stroke. There are generally three and sometimes four cams upon each of the discs, so as to cut off the steam at one-half, one-third or one-fourth, or any other point corresponding with the force of the steam and the load respectively.

To obtain this range of expansion, the rollers which work the steam valves are moveable, by brass strips which slide in the grooves in the cross heads, so as to bring the roller over any one of the cams that may be required; and fixed pointers show, by a graduated scale on each brass slide, the exact point of the cylinder at which the steam is cut off; and by these means the extent of expansion is regulated and brought under the eye of the engineer.

It has already been stated, that the steam valves are not lifted so high as the exhaust valves; and the reason of this is, that as the exhaust valves are not variable in their action, and always require full openings into the condenser, it is desirable to retain them open throughout the whole length of the stroke. This process is effected with a greater degree of certainty than by any other description of valve. The exhaust valves are raised suddenly by the short inclined planes of the cams; and having allowed time for the escape of the steam from the cylinder through a wide passage into the condenser, they suddenly fall by gravitation, and thus a more complete vacuum is formed under the piston than is probably attained by any other process.

The working of these valves is effected with a degree of certainty and simplicity which renders them very satisfactory, both as regards their efficiency in conducing to the economy of steam, and the perfect ease with which they are worked.—*Practical Mechanic's Jour.*

British Association.

On the Manufacture of the Finer Irons and Steels, as applied to Gun Barrels, Swords, and Railway Axles, By Mr. W. Greener, of Birmingham.

Continued from page 696.

Swords are another manufacture to which this improvement especially applies. Mr. Greener observed that all his investigations go to fully satisfy him that it is in a similar way the Arabs produce their finely tempered Damascus swords—namely using two steels of different carbonization, mixing them in the most intimate manner, and twisting them many fantastic ways, but observing method in that fancy. He is led to think that they do not temper by heating, and immersing the blades in a cooling liquid, as practised by us at the present day. If we subject a Damascus blade to the action of acid, the laminated structure is perfectly visible; if the blade be heated and immersed, crystallization takes place, and the limina disappears for ever. He was not then going to discuss the merits of our mode of tempering swords, but would merely allude to the fact that no European weapon had ever yet been produced equal in tenacity to those of Damascus.

The government inspector of small arms gave in evidence before a committee of the House of Commons in May last, "that the swords manufactured in Birmingham were not fit to be issued to the army." If so, this question becomes of vital importance not only to that district, but to the whole empire. Mr. Greener's investigations satisfied him that tempering by crystallising the steel (*ie.* tempering in the ordinary way) is far from the wisest course. He has found by experiment that the Damascus blade in its fibrous state, or hammer-hardened, is more difficult to break by a 100 per cent. than the best English-made blade. but temper it in the same way, and it shows no greater tenacity than our own. The Damascene figure is destroyed by the carbon becoming equally diffuse; nor will acid develope it—it is entirely gone. But observe it with a glass attentively, and what is now a mere mass of crystal was previously a fibrous system of the most minute and beautiful arrangement. The tendency of all crystalline structures to lose tenuity, and separate by repeated actions of the waves of vibration, is evident to all scientific men. From these facts we may draw the conclusion, that swords constructed of dissimilar steels, tempered by condension of its fibres, either by repeated rollings, hammering, or many other processes which our perfect machinery give us the opportunity of doing. Thus we may hope to see every soldier of the empire armed with a weapon as good, if not so costly, as the highly prized Damascene.

Lastly, though not of the least importance at the present day, is the construction of railway axles. If experience shows that the addition of one-third steel to two of iron doubles the strength of a mass so constructed, why not adopt this improvement in railway axles, and other parts of machinery on which the safety of hundreds sometimes depend? A few months previously to the death of the late George Stephenson, Mr. Greener consulted him on the possibility of improving this essential material, and at his instigation proceeded to make a considerable number of experiments. It appeared to him a settled fact, that from the affinity iron evinces for the various gradations of electricity, to galvanic electricity may be traced the rapid crystallization which takes place in railway axles, after having travelled over a given number of thousand miles. It is well known to all acquainted with engineering, that axles constructed of the most fibrous homogenous iron, are changed into a crystalline state of the most perfect kind, extending some inches from the journal This, it may be assumed, is effected by the galvanic electricity generated by the bearings and the journal while in rapid motion. To this also, he apprehends, may be attributed the great tendency of axles to heat. To ascertain this fact, Mr. Greener subjected wire of various metals, from the ordinary iron wire to wire constructed of his laminated steel, to a strong and lengthened current of electricity, for a period of two hours, which effectually changed the fibre of the inferior irons to a crystalline state—their tenacity was entirely destroyed, and breaking with the brittleness of glass. The highly fibrous state of both the mixtures of steel and iron, and the fibrous steel, was not effected in the like ratio—not even after enduring the passage of the current for double the period. Hence he inferred that mixtures of iron and steel in axles would not only add to their durability and safety, but materially lessen the consumption of the lubricating material. This result will also be materially advanced by the adoption of a hollow axle—not *hollow* axles, which require increased diameter or surface, but an axle of precisely the present dimensions, with a perforation not exceeding ¼ inch in diameter; but this is a question of importance enough to demand a paper exlusively devoted to it.

To the adoption of mixed steel and iron is attributed the successful use of the gun-harpoon; for many years no iron could be found which would effectually resist the rapid motion given to it by gunpowder. It is a fact beyond dispute that all gun barrels will only stand a certain number of explosions. an ordinary iron barrel will seldom stand a repetition of four proofs,—and their quality even the best, a certain number of years' use changes their nature, and they become unsafe. So it is with railway axles, and, in short, all structures of this metal which, after a given time, part with every quality that renders it valuable. And thus arises a question whether the construction of horizontal bridges of iron is calculated to endure the many years their projectors hope. The waves of vibration, from the rapid passage of locomotive, partakes much of the nature of concussion, and as such, is peculiarly liable to be classed as one of those injured by excessive vibration.

Remarks.—The PRESIDENT (Mr. Stephenson) remarked on the danger of assuming facts and reasoning from that assumption. With respect to the influence of vibration on the structure of iron, he considered there was good room to doubt that the bearing force or pressure upon metals caused crystallization. It was by no means proved that railway axles were subject to the passage of currents of electricity, and therefore granting the assumption that the passage of the electric current changed the character of the iron, there was a link wanting in the chain of reasoning, inasmuch as it was not proved that axles were subject to this electrical influence. Moreover he was inclined to doubt whether if a piece of iron was at first perfectly fibrous, vibration would ever change the structure of the metal. The beams of Cornish engines, for example, were subject to vast pressure; they never become crystallised; the connecting-rod of a locomoitve was subject to great vibration, strain, and pressure, vibrating eight times a second when the velocity is 40 miles an hour: he had watched the wear of a rod for three years, and no change was perceptible in the structure of the iron. He doubted, therefore, the correctness of the assumption made by Mr. Greener.—After a few words from Mr. Roberts in support of this opinion, the discussion terminated.—*C. E. & A. Journal.*

Below we give the answers of Mr. Clay and Mr. Calhoun to the St. Louis Convention:

Letter from Mr. Calhoun.

FORT HILL, Sept. 16th, 1849.

GENTLEMEN: I regret that I cannot accept your invitation to attend the Convention to be held at St. Louis, on the 16th of the next month, to deliberate upon the expediency of connecting the Valley of the Mississippi with the Pacific. My engagements are of a nature that would not permit me to be present.

No one more highly appreciates the subject of your meeting than I do. I have made up no opinion as to its Eastern or Western terminus or the route that should be adopted; nor shall I, until I am better informed. My wish is, that the best route, all things considered, should be selected, including both termini. The work should look to the whole Union, and the general commerce of both the Atlantic and Pacific oceans. Such will be the views that will govern me, whenever I may be called on to act on the subject, I regard the work to be one of too great magnitude and importance to be influenced by local or private considerations.

With great respect, I am, &c.

J. C. CALHOUN.

A. B. CHAMBERS,

Letter from Mr. Clay.

ASHLAND, Sept, 19, 1849.

GENTLEMEN: I have received your official letter, in behalf of a Mass Meeting of the citizens of St. Louis, inviting me to attend a National Convention in that city on the 16th of next month, to deliberate on the expediency of connecting the Atlantic and Pacific Oceans in the Valley of the Mississppi, at an early day, by Railroad. &c. I am sorry that it is not in my power to attend the proposed Convention, other indispensable engagements interfering.

As to the project itself, the means of its execution, and the termini of the Road, I stand perfectly uncommitted, and feel no prejudices nor predictions which would sway my judgment. Before an enterprise of such vast importance is undertaken, all the light, of which the subject is susceptible, ought to be obtained Among these is that to be derived from accurate surveys of contemplated routes, and their practicability, as well as estimates of the cost. I hope that the deliberations and proceedings of the Convention of St. Louis will afford useful aid in arriving at a proper concluion.

I am, with great respect,

Your obedient servant, H. CLAY.

MESSRS. A. B. CHAMBERS,

New Hampshire.

Wilton Railroad.—Directors for the ensuing year:—Daniel Abbott, Charles F. Gove, Abiel Lovejoy, William Ramsdell, Zebediah Shattuck, Joseph Greely, Clark C. Boutelle, Aaron P. Hughes, Clerk. Some gentlemen from Amherst tendered a subscription of $40,000, to construct the road from Danforth,s Corner to Amherst Plain; but the whole matter was postponed.—[*Nashua Telegraph.*]

Georgia.

Western and Atlantic Railroad.—The Tunnel.

The Ringgold Republican of the 20th ult. says: "We are informed that 155 feet will complete this mammoth enterprise. The excavation has passed through the rock obstruction on both sides, and for several days past no impediment to the progress of the work has been presented. It is thought by those who have an opportunity to form a correct judg-

ment upon the subject, that the cars will run through this subterranean passage by the 1st of January next, and perhaps sooner."

We learn that the contractor, Mr. Gray, writes to a friend, that the cars will be running through the tunnel by the 1st of December.

New York.

Railroad from Ithica to Owego.—We learn from the Ithica Chronicle that the railroad between that place and Owego will be ready in about thirty days. It is now called the Cayuga and Susquehannah railroad, the terminus to be a mile from the landing, for the present, and will be completed nexr spring. Time of running one hour. The steamboats on the lake have been purchased by the company, and another will be added next season. It is intended to run these boats during the winter to Cayuga Bridge, and it is said that the difficulties heretofore in the way on account of the ice, will be fully removed. The rates of fare and freight are to be reduced.

Virginia.

Wm. Ward, Esq. President, and Capt. James Barnes, Engineer of the Seabord and Ronaoke Railroad Company, arrived day before yesterday from the North; and we are graitfied to learn that they have made arrangements for commencing immediate operations on the line of road between Portsmouth and Weldon. The contracts for the whole of the iron have been closed on highly advantageous terms, and the iron will be shipped on as fast as vessels can be engaged for the purpose, and in two or three weeks "the clink of hammers closing rivets up." will be heard along the line of the road.—*Nor. Her.*

Tennessee.

Nashville and Chattanooga Railroad.—The Chattanooga Gazette of 26th ult. says: "The engineers this week completed the final location of the Nashville and Chattanooga railroad, from the Cumberland mountain to Chattanooga. We understand from them that it is not determined whether the road will cross the river in this state or Alabama. If the company succeed in getting a favorable location from the state of Alabama, for that portion of the road which would run through that state, they will cross the river below the island in Alabama—if not, it will cross above the island, and be located entirely in this state. The directors are called on to meet on the 7th proximo, to transact some important business. They will have another meeting in December, when it will probably be determined whether or no the road will be put under contract from the point where it cresses the river to Chattanooga forthwith."

We copy from the Boston Traveller the following interesting description of the Reading railroad. As this is one of the most important roads in the covntry, and as the description is taken from actual observation, and presents a popular view of the road, its resources and operations, we know of nothing more useful or interesting that we can give our readers:

READING RAILROAD.

No railroad in the Middle States, none perhaps ont of Massachusetts, has claimed so large a share of the public attention as the Philadiphia, Reading and Pottsville railroad, or as it is generally called the Reading railroad; and yet there is no road, probably, the characteristics and capabilities of which are so imperfectly understood. Comparatively few among us have any personal knowledge of the road. It is known generally as a mere medium of speculation; and a great deal of undeserved odium has attached to it from causes which have no connection with the intrinsic value of the road. If the character of the road were better known, and its capacities and prospects for business better understood, its stock would soon cease to be a foot-ball among the street brokers, and assume a permanent form and value. Such at least is the impression which we derived from a recent visit to the road, and a cursory observation of its immediate resources and facilities for traffic. We do not propose to speak of the present pecuniary aspect of this truly great enterprise, but merely to give, in brief, such history and description as will convey an intelligible idea of what the road now is, and what under good management it may become.

The road extends from Philadelphia to the coal mines of Pottsville, 93 miles, closely following the course of the Schuylkill river, even to its sources in the coal region of Schuylkill county. The river rises in and drains nearly the whole of Schuylkill county, bursting through the Kittatiny chain between the counties of Berks and Schuylkill, after a course of some 30 miles from the west. It then turns nearly to the south for a distance of 20 miles, passing the town of Reading, immediately below which it pierces the Blue Ridge and pursues a south-eastern course of 50 miles, till it reaches the environs of Philadelphia and is lost in the greater volume of the Delaware, five or six miles below that city.

The railroad is located, throughout the whole line, almost immediately upon the banks of the Schuylkill. With the river and the rich and beautiful scenery of the valley in constant view, the route of the Reading railroad is certainly pleasanter than that of any other railroad in the country.—Few fashionable routes of travel can furnish, within the same distance, more attractions to the traveller for pleasure. The country, through which the road passes, is populous, highly cultivated, and productive; and the vast amount of coal business which is concentrated upon the railroad and the canal, excites the wonder and admiration of the traveller.

The railroad was projected in 1833, and a charter for it obtained in the year following. In 1835, about 40 miles of the road were put under contract. The original design was to carry the road only from Philadelphia to Reading, a distance of 58 miles, other corporations having contemplated the construction of railroads from Reading to the Schuylkill coal region. These roads, however, were finally constructed by the Reading Railroad Company; and the whole line of 93 miles was embraced in its charter. under the name of the Philadelphia, Reading and Pottsville railroad. The road was opened for public travel from Reading to Pottstown, 18 miles, in May 1848; from Reading to Norristown, 41 miles, in July of the same year; and to Philadelphia, 58 miles, in October, 1839; and the whole line, from Philadelphia to Pottsville, was completed in January, 1842.

A double track extends the whole distance from Pottsville, in the Schuylkill anthracite coal district, to Richmond, on the Delaware, 3 miles above the city of Philadelphia, and the grand shipping port for the coal. There is also a double track branch, 1½ miles long, which connects the road with the State or Columbia railroad, and thence with the principal business street of Philadelphia. This is for the accommodation of passengers and merchandise, and the city coal business.

The tracks are laid with a rail of the parallel H form, with both top edges alike. The rail weighs from 45 to 60 pounds to the yard—the greater portion being the heavy pattern, which is used exclusively in renewing the track. The rails are notched into white oak sleepers or cross ties, 7 feet long, and varying from 7 by 8 to 8 by 10 inches at the joints. They are laid upon broken stone, 14 inches deep, well rammed. After several trials of different methods of superstructure, this plan was found the best calculated for the business of the road. In all respects, the road is well built.

The grades of the road are admirably adapted to its heavy transportation of coal in one direction, being either level or descending—with no steeper inclination than 19 feet per mile towards tide water—from Schuylkill Haven, the most important point of supply of coal, to the Falls near Richmond, a distance of 84 miles. At the Falls, an assistant locomotive engine is supplied, which pushes the loaded train, immediately on its arrival, up a grade of 42½ feet per mile for a distance of a mile and a half leaving it on a descending grade and within four miles of Richmond, whither it is hauled by the same engine by which it is taken from the coal region.—The power of an engine on this road is therefore limited only by the resistance of the train on a level—a fact of great importance, as it secures for the road an economy of transportation, per ton, which is unparalleled.

There are no less than 120 bridges on the road.—Of these 83 are stone bridges, varying from 6 to 72 feet span; 9 iron "Howe" bridges, from 25 to 38 feet span; 14 lattice arched "Howe" and "Burr" wooden bridges, from 41 to 160 feet span; and 23 other bridges of short spans, from 14 to 39 feet each. One of the stone bridges crosses the Schuylkill at Phœnixville, 27 miles from Philadelphia, and is worthy of notice. It consists of 4 cut stone arches, of 73 ft. span and 16½ feet rise, and cost, with ice-breakers, &c., 47,000 dollars.

There are four tunnels on the road: one called the "Black Rock Tunnel," near Phœnixville, 1934 feet in length, 19 feet wide and 17 feet high, is thro' solid rock, and was worked from 15 shafts and 2 end breasts. The cost of this tunnel was 153,000 dollars. Another at Port Clinton, 78 miles from Philadelphia, called the Pulpit Rock Tunnel, is 1,600 feet long, worked from 2 shafts and 2 end breasts, through solid and loose rock mixed, and requiring 1,330 feet to be arched. This cost 138,000 dollars. Another, called the Flat Rock Tunnel, near the village of Manyunk, 7 miles from Philadelphia is 962 feet long, through very compact mica rock, worked from two ends only, and cost 91,000 dollars. The fourth is a tunnel under the Norristown railroad, 172 feet long, and arched throughout with brick.

The depots are laid out on a scale commensurate with the great business of the road. They are substantially built, but with a view to use and convenience rather than ornament.

Some account of the machine shops, the extensive arrangements of the company at Richmond for shipping coal, &c. will be given in another number.

The machine shops of the company are very extensive. They are located at Reading and Pottstown. Those at Reading are for the repair and renewal of the running machinery of the road; and those at Pottstown are for such repairs as are required by the road way department.

At Reading the company's property covers nearly 40 acres of ground. The workshops and other railroad buildings occupy but a small portion of the ground, and the remainder is unimproved and reserved for the demands of increasing business. The present improvements consist of large machine shops, with every variety of stationary machinery; black smith's shops; iron and brass foundries; copper and tin smith's shops; boiler shop: carpenter and pattern maker's shop; iron coal-car shop; steam tilt-hammers; tire making machinery; water works for supplying water stations and shops; engine house; wood and water stations; merchandise depot; coal shoots; offices, &c. At Pottstown, 18 miles from Philadelphia, are several shops for operations connected with the construction and repair of bridges, trucks, and whatever else is required for renewal and repairs of the roadway.

The repairing department, as will be seen by these statements, is of vast magnitude. At Reading alone some 600 hands are employed. The first impression upon almost every observer would be that less machinery and less force ought to suffic for repairs; and it is altogether probable that a reduction might be advantageously made. The arrangement of the shops is not the most perfect, nor best adapted to the necessary supervision of the workmen; and without the closest scrutiny and the most careful economy, it is obvious that there may be leakages which might materially affect the pecuniary condition of the company. It must be remembered, however, that the vast business of the road requires corresponding arrangements for renewal and repairs of road way and running machinery; and those who are conversant with the matter believe that the present business of the road fully justifies the extensive work shops which are now in operation, and that the company have already secured a great economy in the manufacture of their own tires, bar and cast iron, etc.

A statement of the present equipment of the road will convey some idea of the apparatus which must necessarily be required to keep the road in a suitable condition for business. The running machinery now comprises 83 locomotive engines and 5,117 cars for coal, merchandise and passenger business, and for supplying motive power on three branch railroads in the coal region. The whole force exclusively employed in the coal business, is 42 engines and 4606 coal cars. With this force, during four weeks, (24 working days) of the past season, the large amount of 169,334 tons of coal were transported on the road. Of the locomotives, 48 are of the first class, (27 to 17 tons), 26 of the second class (17 to 10 tons), 8 of the third class, (10 to 6 tons,) 3

of the fourth class, (6 to 4 tons.) Of the coal cars, 3000 and over are iron, with four wheels, weighing something more than two tons, and carrying five tons of coal. The whole cost of the running machinery has been $2,278,326.

The arrangements at Richmond, or Port Richmond as it is generally called, for receiving from the cars and shipping the coal brought over the Reading railroad are very extensive and complete. Richmond is the lower termination of the road on the Delaware, about three miles above the city of Philadelphia, and about 100 miles from the sea.—The railroad company own here about 60 acres of the most valuable property, including 3200 feet of river front. Two thirds of this front is now occupied by commodious wharves and piers, 17 of which varying from 342 to 1142 feet in length, extend into the Delaware, with sufficient water to allow vessels of 700 tons to lay along side.

These wharves and piers are most substantially built. They are elevated some 16 feet above the water, and are furnished with shoots at convenient points, through which the coal is passed into the holds of vessels, directly from the dropped bottom of the cars in which it is brought from the mines. The railroad tracks are raised a sufficient height above the solid surface of the piers and wharves to admit of the stacking of 200,000 tons of coal during the winter, or when it is not demanded for immediate shipment. Capacious docks extend in short, between the wharves, so that the whole river front is made available for shipping purposes, and 97 vessels may be loaded at the same time. From these wharves 956,000 tons of coal have been shipped in one year; and it is estimated that more than two million tons might be shipped without any enlargement of the present arrangements.

A neat semi circular engine house, capable of holding 20 locomotives and tenders of the largest class, has lately been erected at Richmond. There are likewise spacious machine and workshops for lighter repairs of engines and cars. It is probable that the Richmond wharves are without a parallel in the world, in regard both to the magnitude of the shipping facilities which they afford and to the am't of coal which has been shipped from them. Every stranger in Philadelphia, who has the least curiosity or interest in such things, should visit this chief outlet of the coal trade of Pennsylvania.

There are several lateral or branch railroads connecting with the Reading road, which contribute largely to its business, and although under other charters and corporations, use its cars and return them loaded with coal or merchandise. The aggregate length of these roads is about 95 miles. Most of them are constructed with the best superstructure and in the most substantial manner. These branches extend from Port Clinton, Port Carbon, Pottsville, etc., and penetrate more or less deeply into the various collieries of the Schuylkill district, the Tamaqua, Little Schuylkill, Pottsville, Mine Hill, etc.

The affairs of the Reading railroad corporation have recently been laid before the public, in a very lucid and satisfactory report by Mr. Neal, the president of the Eastern railroad, who undertook an investigation in behalf of the eastern stockholders.—Having given a full synopsis of Mr. Neal's report, it is unnecessary for us to recur to the subject here. His conclusion was, that the road is susceptible of being made a good property, and that under proper management it must inevitably increase in value. No one can take even a cursory view of the road, without being strongly impressed with the conviction that Mr. Neal's conclusion is well founded.—The road is admirably located and substantially built. The sources of business which it can command are almost inexhaustible. It is already a passenger road of no mean importance; and in this respect its business has not certainly reached its full capacity. As we have before remarked, the route of the road is one of the pleasantest in the country, and with suitable arrangements it might be made very attractive for pleasure travel merely. The Schuylkill coal region is full of interest, and to those whose taste or curiosity would be gratified by the sources of industry and wealth which are there exhibited, as well as to those who love beautiful natural scenery and the purest mountain air, a summer excursion over the Reading railroad cannot be otherwise than agreeable and healthful. The cost of the road may now be stated at $16,500,000, proportioned among the several departments nearly as follows: roadway, $13,500,000; depots, $200,000; running machinery, $2,300,000; real estate, $500,000.

In estimating the importance of this great work, it must be borne in mind that the anthracite coal trade of the United States, which in 1825 was only 34,893 tons, had in 1835 increased to 569,603 tons, and in 1848 to 3,089,238 tons. Of the latter amount there were brought to market by the various improvements, as follows:

By Reading railroad	1,216,233 tons.
By Schuylkill canal	436,602 "
Making from the Schuylkill region	1,652,835 "
By Lehigh canal	680,746 "
By Delaware and Hudson canal	437,500 "
By Penn. canal from Wyoming val.	237,271 "
By railroad and canal from Shamokin, Pine Grove, etc	80,886 "
Total in 1848	3,089,238 tons.

There is no room to doubt that the consumption of anthracite coal in the United States will regularly and greatly increase. The demand for it as fuel will be augmented with the rapid growth of our population, notwithstanding the improved economical arrangements which will undoubtedly be made for its ordinary consumption; and science is industriously at work to increase the facilities for employing it for manufacturing purposes. In regard to the avenues by which this increase is to be brought to market—we are not prepared to state to what extent the capacity of the canals can be increased; but the present capacity of the Reading railroad, without any additional outlay, may be stated as follows:

1,500,000 tons of coal, at $1 45	$2,175,000
115,000 passengers	190,000
65,000 tons merchandise	130,000
Mails, etc	15,000
Gross receipts	2,510,000
Expenses, including transportation, repairs, etc	1,100,000
Net profits	$1,410,000

We here speak of the present capacity of the road. Mr. Neal's estimate of annual net profits, for four years to come, is $1,073,350, and upon the basis of that estimate he declares his willingness to take the road and operate it for ten years. We have no doubt the undertaking would give him a good bargain.

When the coal trade shall require it—and it is a probable supposition that it will, within a few years—the capacity of the railroad may be increased to an extent limited only by the ability of its double track to pass an almost endless train of coal cars; and this without any other additional expense than the running machinery, and a few sidings or turnouts. The engines and cars for every additional half million tons, would cost about $400,000—say 128,000 for 15 engines, and 280,000 for 1600 coal cars—and at the present average rates of toll would produce an additional gross income of $725,000, or allowing for all expenses, a net income of $470,000.

The Pacific Railroad

MEMPHIS CONVENTION.

This Convention assembled, according to notice, at 4 o'clock P. M., on the evening of the 23d October, when Col. Nicholas Davis, chairman of the committee of organization (appointed at the meeting in the morning) nominated Lieut. M. F. Maury, U.S.N., president. He was unanimously elected. The following officers were nominated and elected:

Hon. C. C. Clay of Alabama, W. F. Mason of Mississippi, Col. Willoughby Williams of Tennessee, Col. R. F. W. Alston of South Carolina, Dr. D Jamison of Georgia, Col. Maunsel White of Louisiana, Ex-Gov. T. S. Drew of Arkansas, Hon. Ashbel Smith of Texas, Ashton Johnson of Missouri, William M. Hall of Illinois, Col. B. E. Gray of Kentucky, Col. John T. Trezevant of Virginia, J. S. Thompson of Pennsylvania, and L. L. Robinson of New York were appointed vice-presidents; and A. H. Arthur of Mississippi, Richard Walker of Alabama, E. J. Carroll of Tennessee, C. A. Price of South Carolina, Alex. Walker of Louisiana, L. J. Reardon of Arkansas, E. W. Upshaw of Texas, A. Finley of Missouri, and H. J. Eastin of Kentucky as secretaries.

After the report had been unanimously adopted, Hon. Nicholas Davis and Col. Maunsell White were appointed a committee to conduct the president to the chair, and on motion of Mr. Yates of Texas a committee of one from each delegation of the states present was appointed to draft rules for the government of the convention, and for the settlement of the mode of voting, etc. Lieut. Maury was conducted to the chair—a venerable relic, says the N. Orleans Picayune, being the same in which John Hancock set and presided at the first Continental Congress. How it got to Tennessee we are not informed. Lieut. Maury then addressed the convention in a speech which we are compelled to omit for another number of our paper. In consequence of the speech of Lieut. Maury little was done during the remainder of the evening. Mr. Forshay of Louisiana, moved that the members of the St. Louis convention be not admitted until the committee on rules had reported—was opposed by Mr. Bowlin of Missouri, and finally withdrew his motion. A committee on rules was appointed, and the thanks of the convention voted to the president, pro tem., when the convention adjourned to meet at 9 on the next day.

October 24.—The convention met at half past nine, an immense crowd, among whom were many ladies, being present. Two members from each delegation instead of one, were appointed for the purpose indicated above. The following gentlemen were elected to compose the railroad committee:

Alabama—J. A. Campbell, Dr. Fearn.
Arkansas—W. K. Sebastian, Dr. Kirkwood.
Georgia—Dr. D. Jamison.
Illinois—W. M. Hall, James Williams.
Kentucky—B. E. Gray, E. J. Bullock.
Louisiana—M. M. Cohen, J. C. Larue.
Missouri—J. Loughborough, T. F. Risk.
Misisippi—J. W. Chalmers, J. S. Yerger.
New York, L. L. Robinson.
Pennsylvania—George Darsie, Charles Naylor.
South Carolina—D. F. Jameson, J. F. G. Mittag.
Texas—C. C. Mills, A. J. Yates.
Virginia—J. E. Leigh, J. T. Trescvant.
Tennessee—J. C. Jones, H. G. Smith.

And the following to cast the vote of their respective states:

Alabama, N. Davis, S. Borland; Georgia, Dr. D. Jamison; Illinois, W. M. Hall; Kentucky, E. J. Bullock; Louisiana, Samuel C. Reid, Jr.; Missouri, J. B. Bowlin; Mississippi. J. D. Martin; N. York, L. L. Robinson; Pennsylvania, J. N. Smith; South Carolina, J. A. Woodward; Texas, R. L. Lindsay; Tennessee, John Pope; Virginia, J. E. Leigh.

Mr. Loughborough of Missouri, then read and submitted the report to the St. Louis convention, which was laid on the table, to await other plans of the same nature, in order that the convention might deal with them all at once.

On motion of Mr. Cohen of Louisiana, Mr. Whitney was admitted to a seat in the convention, and the ladies were invited to a seat on the floor. Mr. Anthony of Arkansas, offered a resolution that no question involving the construction of any highway beyond the limits of this republic, be entertained.—This brought Lieut. Maury to his feet, for the purpose of explaining his position. He succinctly stated his views. He was in favor of this railway, but he saw no reason why ships and property should be exposed to the perils of a voyage around Cape Horn. This canal would make railroads as the Erie canal had done. A ship canal across Tehuantepec would be worth a dozen railroads, and it

would create a dozen of them. He alluded to the anxiety of Great Britain on this subject, as proof of the immense importance of such a canal.

Mr. Larue, of Louisiana, concurred with Lieut. Maury. It would take 10 years to construct the railroad, and in the mean time it was of great importance to get the eastern and Pacific trade as soon as possible. He then offered three resolutions.

1st. Recommending the general government to make a topographical and geological survey of the country between the Mississippi and the Pacific.

2d. Recommending a military road to the Pacific as necessary to protect emigration and advance population.

3d. Recommending the government to convey military stores, troops, etc., to the Pacific settlements by the shortest route; to wit, Nicaragua Tehuantepec, etc.

Mr. Campbell, of Alabama, offered three resolutions:

1st. Relieving Congress of all constitutional embarrassment, by procuring an amendment specially authorising the construction of the improvement to the Pacific.

2d. Expressing the opinion that the public lands are a legitimate fund for this purpose.

3d. That a liberal appropriation of public lands lying within the several states should also be made.

Mr. Smith, of Texas, offered a resolution to appoint a committee of one from each state and territory represented in the convention, to present a memorial to Congress representing the importance of a military road, to commence on Red River between 32 and 33d ° North Latitude—thence to El Paso—thence along the frontier to some point on the Pacific—and establishing stations, erecting blockhouses, &c. &c.

On motion of Mr. De Bow, a committee of seven was appointed to draft a memorial to Congress and an address to the people, setting forth the importance of this great project.

Mr. Yates of Texas, moved that the committee appointed to report on the railroad to the Pacific, report also on the union of the waters of the two oceans.

Mr. Topp, of Tennessee, offered several resolutions, the substance of which was, that the government ought to construct this road, that it ought to employ able engineers to make a scientific survey, and that it was duty of the government also to aid by means of the national domain, in uniting the great lakes with the Mississippi.

Mr. Mills of Texas, offered a resolution in favor of the Gila rorte. Upon this "Captain Charles Naylor, of Pennsylvania, rose and addressed the convention on the subject of the Southern route: "The discussion on this subject," he said, "reminded him of a school boy bounding the United States, during the war with Mexico. He began by saying, on the north by the icy pole, on the east by the Atlantic, on the west by the Pacific, and on the south—and here the boy hung his head and considered, knowing that our troops were in Mexico, and replied, on the south—just as far as we d—n please.—(Roars of Laughter.) And so I found it when I was in Mexico—the boundary was just as far as we d—n please to make it. This is the boundry of our country on the south. Then who will say that we cannot make a railroad wherever we want? From the remarks of the President, and from the great aqueduct of public feeling in the bosom of the people, I feel that we are all in favor of the school-boy's boundary." Capt. N. then alluded to our conquests in Mexico and the part he bore in them, and he yet hoped to see our flag wave on the school-boy's boundary. (Great applause.)'

Mr. Loughborough, of Missouri, offered a resolution, that it was right in selecting the route to accommodate as many States as possible.

Mr. Watkins of Arkansas, then offered the following resolutions which were debated at length by himself, Col. Jefferson Davis and others, and produced violent excitement, in the midst of which the Convention adjourned.

1. Resolved, That the construction of a railroad from the valley of the Mississippi to the Pacific Ocean, for purposes of national defence and military communication, and transportation, and to increase the value of the public domain and bring it into market, are strictly within the constitutional powers of the General Government, and it can be no objection to the exercise of this power that it will facilitate emigration and commerce.

2. Resolved, That the South and her institutions have more to dread than to hope for in any future changes or amendments of the federal constitution, and we are opposed to any amendment conferring on Congress any further powers than it now possess over the subject of internal improvements.

In the evening, Mr. Davis having moved to lay the resolutions of Mr. Watkins on the table, the discussion was continued with much warmth. The motion finally prevailed. A number of letters from distinguished individuals was read. A mass meeting was to take place in the evening. The Convention adjourned until 9 on 25th.

THIRD DAY.

Hon. C. C. Clay took the chair, Lieut. Maury being indisposed. The meeting was opened with prayer by the Rev. Mr. Webber, formerly of Goochland county, Virginia.

Hon. Solon Borland having on the 24th offered a series of resolutions calling for a survey of the whole route, and the establishment of a line of posts to the Pacific, made a speech in support of his proposition. He gave way however, for Mr. Walker of Louisiana, to make an explanation. That gentleman opposed Mr. B's resolutions on the ground that they were too limited, and were moreover embraced in those of Mr. Larue, the substance of which we gave yesterday. The question was discussed between these two two gentlemen, and the resolutions were finally referred.

Mr. Woodward of South Carolina, said that neither this convention nor that of St. Louis was a National Convention. They were both sectional and sought to bring to the notice of Congress a particular section of country for the purpose of making a railroad. He believed the Memphis route the proper one, and influenced by this belief, he begged leave to submit the following resolutions:

Resolved, That it is highly expedient, in a military and commercial point of view, that a communication by railroad should exist between the waters of the Mississippi river and the Pacific ocean, and that every means and facility that may lie within the constitutional powers of the Federal Government, if any do, should be applied to such object.

Resolved, That a route to terminate westwardly at San Diego, on the Pacific, and eastwardly at Memphs, on the Mississippi river, is strongly indicated by climate, temperature, geographical and commercial relations, directness of course, centrality and an equal regard to the interest of every part of the Union.

Mr. Walker of Louisiana denied any sectional feelings for himself and his colleagues. They would support all routes, but they acted under instructions. They were instructed to bring forward the Tehuantepec route, in order that it should be brought to notice, and presented to Congress.

Mr. Bowlin of Missouri, did not deny that he had strong local prejudices. They had, however, been repudiated, in discussing the general question, at St. Louis, and he hoped they would be here.

Mr. Woodward was for a national route, yet he spoke in favor of a local route. He hoped this convention would go before Congress with the same general, broad principles that the St. Louis Convention had acted on. It was proposed to array Memphis against St. Louis. It was a sort of triangular duel, each shooting at the other. The St. Louis Convention wanted the road, no matter where it ran, so it terminated on the Mississippi and Pacific. He would leave the route to engineers.

Mr. Upshaw, of Texas, offered the following resolution:

Resolved, That this convention extend the same courtesy to St. Louis that the gentleman from St. Louis says the St. Louis Convention extended to Memphis, by taking St. Louis under our wing, as St. Louis took us under hers.

Mr. Stanton denied that there was any rivalry between the two routes. Mr. Fray, of Kentucky, wished to amend the resolutions of Mr. Woodward by substituting the mouth of the Ohio for Memphis, saying Illinois would go for that terminus. This Mr. Hall, of Illinois, denied, saying that state was for Memphis.

Mr. De Bow made some remarks with regard to the delegation of Louisiana, who he said had no scheme, and were acting under instructions. These related principally to the Tehuantepec improvement, for which they were instructed to obtain the assistance of the convention, in inducing Congress to pass a law for the passage of military stores, &c. when completed. They were farther instructed to ratify any route selected by this convention, and to express a preference for that along the Gila river.

Col. Davis, of Mississippi, offered the following resolution as a substitute for that of Mr. Woodward:

Resolved, That the committee on resolutions already created, be instructed to do nothing more of a general character than to report a memorial to Congress, asking for a survey of the various routes proposed for the great railway from the Valley of the Mississippi to the Pacific Ocean.

Mr. Woodward defended his resolutions. He said they were national, merely expressing a preference, which, if ill founded, would have no force. He contended that all the routes should be surveyed, but that still, this would not prevent him from preferring Memphis.

The committee on resolutions reported that they would make a general report on the next day at 10 o'clock.

Mr. Hall of Illinois, having the floor, gave way to a motion to adjourn until the 26th, at 9 in the morning.

FOURTH DAY.

The convention met at 10 o'clock, A.M.

Mr. Hall, of Illinois, resumed the discussion of the resolutions which he had offered. He considered them of the greatest importance. He proposed as one from the great lakes, to put in claims for his route. Mr. Hall proceeded to make some very severe remarks upon the project of Mr. Whitney, its engrossing and monopolising character. In the same tone he commented upon the project of Dr. Carver. He was opposed to all monster speculations, monopolising humbugs.

Mr. Stanton, of Tennessee, moved that Mr. Asa Whitney be invited to address the convention, who consented to do so in the afternoon.

Mr. Lea, of Tennessee, proposed to show the convention the practicability and the impracticability of the different routes proposed for a railroad to the Pacific.

Capt. Eastin, of Ky., remarked that Kentucky preferred Memphis as the eastern terminus of the Pacific railway.

Dr. Lea resumed his remarks. He believed a southern route alone to be practicable for a railroad. Dr. L. enforced this proposition very earnestly.

Prof. Forshey, of Louisiana, addressed the convention. He thought that Mr. Whitney was deserving of high eulogy—but did his route respond to the exigencies of the southern half of the confederacy? Prof. F. commented in a forcible manner upon the proposed northern routes—urging as objections the severe winters and difficult mountain passes. He urged a route from the Mississippi river, by the Rio Grande, through El Paso del Norte, down the Gila to San Diego.

The committee on resolutions appeared and reported through Lieut. Maury as follows:

1. Resolved, That it is the opinion of this convention that it is the duty of the general government to provide at an early period for the construction of a national railroad from the Mississippi river to the Pacific ocean.

2. Resolved, That to facilitate the accomplishment of this object, in the opinion of this convention, it is the duty of the general government to constitute an efficient and competent corps of Engineers to make complete explorations and surveys of all the routes that have been designated by public opinion as proper for the line of this road.

3. Resolved, That after the proper surveys shall have been completed, that in the opinion of the convention, it is the duty of the general government to locate the line of the road; and in making the location *that* route should be selected which is easiest of access, best calculated to subserve the purposes of national defence most convenient to the people of, and as far as practicable, central to, the United States, and upon which a railroad can be constructed on the cheapest and best terms.

4. Resolved, That to carry into effect the object of the first resolution, in the opinion of this convention the public lands of the United States constitute a legitimate and proper fund.

5. Resolved, That after the construction of the national railway trunk from the Mississippi river to the Pacific ocean, in the opinion of this convention it is the duty of Congress to aid by the appropriation of the national domain, in the construction of such branch railroads as will best connect it with the northern lakes and the great thoroughfares leading to the Atlantic ocean, and with such other points on the Mississippi river as will connect it with the lines of improvement completed or in the course of construction—and also to aid in the construction of branches from the main trunk to suitable points on the Gulf of Mexico either east or west of the Mississippi river.

6. Resolved, That in the opinion of convention it is the duty of the general government to provide, under liberal conditions, for a connection between the main trunk of the national railroad and all railroads now made or which may hereafter be constructed by the authority of the several States and territories of the Union.

Resolved, That as an important means, a necessary preliminary to the construction of a railroad, it is the first duty of Congress to take the necessary measures for the establishment of military posts from the western confines of our western states, along the southern boundaries of our republic and our Indian frontier to the Pacific ocean—that these posts should be established in all proper places, not far distant from each other, and that civilized and productive settlements should be encouraged around them by sales and the grant of pre-emption rights of the public lands to actual settlers, and by such other encouragement as may be deemed necessary, so, that by these means, ample opportunities may be afforded to our engineers for the immediate survey and reconnoisance of our possessions lying between our western and southern states and the Pacific ocean, and so, also, that by these means safe practical roads, one or more, with facilities of travel, may be immediately formed for our citizens and for the transportation of troops and munitions of war, etc., across our own territories, from the Atlantic to the Pacific shores, and in order that our government may fulfil its recent treaty stipulations with Mexico.

Your committee would further report, that in their opinion it would be highly advantageous to the commerce of this country, and add greatly to its political power and influence, if an immediate connection by railroad or canal, could be obtained between the Gulf of Mexico and the Pacific ocean. Many projects of greater or less promise for the purpose of constructing the necessary works to complete such a communication have been of late agitated, and without, in the present state of our knowledge upon the subject, pretending to decide upon their relative merits, they beg leave to recommend the adoption of the following resolution:

Resolved, That while the contemplated railroad across the continent is being constructed, a present communication between the States of this Union, and the American and Asiatic coasts of the Pacific ocean is of vast importance to every portion of this country; that such communication can be obtained by ship canal or railroad across the Isthmus of Tehuantepec, Nicaragua or Panama, or across them all, which railroads or canals may be constructed by private enterprise, and this convention, in order to encourage the undertaking and completion of such works, recommend the passage of a law by the Congress of the United States, directing the postmaster general, secretary of war, and secretary of the navy, to make annual contracts for the transportation of the mails, troops, and military and naval stores of the government, from the Atlantic to the Pacific posts of the country, by the shortest, speediest and cheapest route.

The committee on resolutions to which was referred the resolution that declares "that in the event of the appropriation by Congress of a considerable portion of the proceeds of the public lands to the construction of a railroad from the Mississippi river to the Pacific ocean, that at the same time liberal appropriations of the public lands lying within the limits of the States should be made to aid them respectively in their works of internal improvement, have had the same under consideration, and have instructed me to report: that the claim of the States is equitable, because the lands of the United States within the State bear no charges for local improvements, nor for the expenditure of the State government, and receive benefit from both sources of expenditure." They therefore recommend the adoption of the resolution:

Resolved, That in the event of the appropriation by Congress of a considerable portion of the public lands, or of the proceeds of the sales thereof, to the construction of a railroad from the Mississippi river to the Pacific ocean, that liberal appropriations of the public lands lying within the limits of the respective states, to be made, to aid them in the construction of their works of internal improvement.

On motion the report on the Isthmus and other foreign routes over this continent was ordered to be taken up. Resolution unanimously adopted.

The reported resolution on protecting the frontier settlement and settlers upon the route, was taken up and unanimously carried.

Committee of Seven appointed by the President to Memorialise Congress.

J. B. D. DeBow of Louisiana.
Absalom Fowler of Arkansas.
James C. Jones of Tennessee.
J. R. Strother of Missouri.
J. F. G. Mittag of South Carolina.
C. C. Mills of Texas.
G. S. Yerger of Mississippi.

The reported resolution in favor of the equitable right of every state to a share in the public lands, and the propriety of using them to build the road.

The reported resolution indicating advantages of a superior character on the route from San Diego down the Gila, through the space between 35d and 33d degrees of latitude to some point on the Mississippi, between the mouths of Red river and Ohio, were taken up.

Mr. Kirkwood of Arkansas, withdrew his call for a vote by states, and offered an amendment adopting the second resolution offered by the gentleman from South Carolina at a preceding day.

A motion was made to lay both resolutions and amendment on the table.

Missouri called for a vote by states, which resulted as follows:

Ayes—Illinois, Missouri and Pennsylvania.
Nays—Alabama, Arkansas, Kentucky, Louisiana, Mississippi, New York, South Carolina, Texas, Tennessee and Virginia.

And so the amendment was not laid on the table.

A long discussion ensued as to the effect the vote had.

Dr. Lea of Tennessee moved to amend further, by resolving that the road should be made to terminate below the icy obstructions of the north, at some point below the mouth of the Ohio.

Mr. Campbell of Alabama, addressed the convention in favor of, and Mr. Naylor of Pennsylvania, in opposition to, the amendment.

Mr. N. thought the amendment too local, sectional; we were met in national, not local convention, and he appealed to the national heart against the resolution. We had labored together—why should we not reap the reward together? It might be a misfortune—was it a sin to be born north? He was a northern man by birth, but he had a southern, a warm heat. He had no personal interest in this matter—but he wanted us to achieve God's mission of progress for which our fathers had been planted in this country. We had our commercial appetite to gratify—barbarism to civilize, heathenism to christianize, ignorance to enlighten, brutality to enoble, to lift up and place erect God's images, capable agents in the world's great labors. This was before us; and, after all we had come to disagreement in this convention, on a route outside of our country.

Capt. Naylor continued—making a fervent, earnest and most eloquent appeal in favor of harmony—he know nothing of routes—we should wait for surveys—surveys of all routes, of every route. We should act now in a grander spirit than of old—we should be national, world-wide in our feelings and action—not whig or democrat, or federal or locofoco.

Mr. Kirkwood of Arkansas, addressed the convention in favor of his resolution.

Mr. Larue of Louisiana, addressed the convention. He was, in part the representative of Louisiana, and could only say that the second resolution reported from the committee went as far as this convention ought to go. We should unite our energies and have the road. That was what he wanted.—We could not have the road without the harmonious concert, the concordant energies of the people, and all the people, of the United States. We should wait for the surveys—for the topographical wagon to come up—not quarrel, like the two Platians, about property in the clouds.

Mr. Woodward of South Carolina rose. He did not expect to make, he did not feel called upon to make an elaborate argument. The gentleman from Louisiana had not met a single point in his argument; if he had, he (Mr. W.) would be glad to hear it indicated; he liked patriotism, but jockeying intrigue, were to guide congressional action in deciding upon a route. He disliked to say these things

—but they were so, and the member who talked to Congress of patriotism, etc., unless he "spoke for Buncomb," would be set down as a fool. Congress would decide upon a route in advance of a survey—a majority never gave up to engineers and mathematical instruments the decision of a question which they might decide in favor of a minority.—The majority would run the road upon its route, even if they ran it bluffly against the mountain barriers. Unless this route was sent up to Congress by this convention it would never even be heard of in a congressional committee. Our silence would be assumed to be an admission of great doubt in reference to the merits of our route. The St. Louis convention had endorsed the St. Louis project—why should we not do the same for the Memphis route? Other routes would come up with recommendations to Congress—and, even to the disregard of the extensive patriotism of the gentleman from Louisiana, we would have to look out for our own interests, because no body else would. He rather doubted the probability of the Memphis route having a fair hearing in Congress—the Memphis route would be ground to dust and nothingness between the upper and nether millstones. We would have to wait until the attempt to construct a railroad on another route had been made, and failed—that would be the demonstration in favor of the Memphis route. His resolutions were more national than the resolutions of the gentleman from Louisiana: his resolutions most singularly and unfortunately indicated a region of country just embracing the slave States. That was bad and might originate scandal and unjust imputations against the convention.

AFTERNOON SESSION.

The convenilon met at 4 p. m.

Mr. Campbell of Alabama, took the floor. We should not, said Mr. Campbell, hesitate to indicate a particular route—St. Louis ought to have done so—we ought to do so. St. Louis was a noble city, and she should have indicated her route to Congress for its favorable consideration. But she had covertly done so; and that was not right. And when she talked of bringing a trunk merely to the limits of the State, this started disturbing constitutional questions, which ought to be avoided or the constitution amended. We ought not to be discussing such matters, but organize public sentiment and act upon it, so as to secure the accomplishment of this great project.

Capt. Eastin, of Kentucky, thought that the largest number of railroad improvements were converging to the great table land of Ohio—he thought it unfortunate to designate or indicate a southern route—the votes were against us—and we should have done well merely to declare in favor of the best route—and to commit members of Congress to this position. A topographical survey could alone determine the proper route.

The amendment of Mr. Kirkwood, of Arkansas, substantially the same with the resolutions of Mr. Woodward, was called, and the vote by States demanded:

AYE—Arkansas, Mississippi, South Carolina, Alabama, Tennessee, Virginia.

NO—Illinois, Kentucky, Louisiana, Missouri, New York, Pennsylvania, Georgia, Texas.

So the motion was lost.

Mr. Darsie, of Pennsylvania, called up his amendment, to strike out the words "is possessed of special advantages." Amendment carried by common consent. The vote was called by States on the original resolution as amended:

AYES—Alabama, Georgia, Kentucky, Louisiana, Mississippi, New York, Texas, Tennessee, Virginia, and South Carolina.

NAYS—Arkansas, Missouri, Pennsylvania, and Illinois.

And so, in the midst of tremendous applause, was declared to be carried. The following is the resolution:

Resolved, That in the present state of our knowledge, we feel warranted in recommending to the particular attention of the general government for examination as possessing special advantages, the route commencing at San Diego on the Pacific ocean, crossing the Colodaro of the west, running along the Gila River, or near it, in a direction to the Paso Del Norte, and thence acrosss the State of Texas to its northeastern-boundary between 32 and 33 degrees of north latitude, terminating at some point on the Mississippi between the mouth of the Ohio river and the Red river.

Judge Walker, of Louisiana, handsomely spoke of the hospitality of Memphis, and offered a resolution of kind and courteous thanks. Passed unanimously.

Mr. Stanton, of Tennessee, moved the thanks of the convention to its President for the able and dignified and impartial manner in which he presided. Carried in the midst of great applause.

A motion was made to adjourn *sine die* after hearing Mr. Whitney.

AMERICAN RAILROAD JOURNAL.

Saturday, November 10, 1849.

Railroad to the Pacific.

The two great conventions of St. Louis and Memphis have been held, and their results are now before the public. We think that they have accomplished much in aid of this great work. The report of their proceedings show that great progress has been made in the public mind in relation to it; that the people are beginning to look at this question in a proper manner, and to subject their opinions upon the various questions arising in its progress, to the control of competent evidence. These conventions were called by the advocates of rival routes, and upon this subject we expected to see a diversity of opinion. This is of little importance compared with a proper appreciation of the nature of this great work, and the proper course to be pursued to secure its construction. There will be but little difficulty in deciding upon the route, as soon as the people are agreed upon the evidence by which this question shall be decided. Both conventions admitted that the question of route was one of engineering—a question which they did not profess themselves competent to decide. We are happy to bear testimony to the general correctness of the views expressed by the leading men of the convention. We here see the first developement of order upon the chaotic state of opinion which up to a recent date has prevailed in reference to this great work. Thus far, those who have led public opinion, have drawn upon their imaginations for their facts, and the desirableness of the work being admitted, just these conditions were supposed to exist most favorable for its execution. Men are now endeavoring to ascertain what are the conditions which actually exist, that they may make use of the proper means to meet them. Opinion follows, instead of anticipating evidence, our progress can now be measured, because the different views which prevail upon this subject are subjected to and decided by the same tests. We are now going the right way to work.

As we before remarked, the conventions did not profess themselves competent to decide upon the question of route, and their proceedings throw but very little additional light upon this point. We cannot regard the letter of Mr. Fremont, read by Mr. Benton, as entitled to much weight. He never explored the routes stated by him to exist, neither does he say how he obtained his information. The letter upon its very face is not evidence—it is mere conjecture. Now these conjectures may be correct; but certainly the existence of the route he speaks of is against all analogy. This new route traverses the base of the loftiest peaks of the Rocky Mountains, and crosses the most elevated *plateau* of this region, from which the heads of the rivers watering this country run in different directions. Now general experience always teaches us that the higher we ascend a river, the less likely are we to find a good route for a railroad. In this letter we find no evidence to rebut this presumption. The letter is entirely unprofessional, and in our minds weakens the confidence which we have felt in this gentleman. An engineer has no right to substitute conjecture for evidence, and one who does this is a very unsafe guide, whether he does this from an ignorance of what belongs to his profession, or from a desire to aid the cause of a partizan. We sincerely hope that Mr. Fremont is correct in his conjectures. If such should be the fact, the greatest obstacle to the success of this road is disposed of.

In reading Mr. Benton's speech, we must take into consideration his peculiar position. What he says has more reference to this, than to an abstract question of a railway. A most embittered political feud exists in the democratic party of this State headed by Mr. Benton on the one hand, and numerous lesser politicians on the other, and both are using all means within their reach to destroy each other. As the subject of a railroad is very popular in the state of Missouri, it was looked upon as very important to get the lead in relation to it in the convention. The statements of these partisans, therefore, must be taken as that of interested parties.—With all due defference to Mr. Benton, we must believe that the Pacific railway, which would realise his highest conceptions of usefulness or greatness, would, after running directly through the State of Missouri, make a sudden *detour*, and finds its *western* terminus at the Senate Chamber at Washington.

So bitter is this quarrel in Missouri that we understand, but from the interposition of members from adjoining States, it would have broken up the convention. At Memphis no such disturbing influence existed. Its proceedings were therefore conducted with greater harmony and dignity.

The most important feature about these conventions is in the answers of the invited guests. They are from the first men in the country, of old political parties, and the tone of the whole is in favor of the work, however much they may differ upon the questions of means, routes, etc. They show that the country is ripe for action, and that nothing remains but to unite upon the best plan to commence the work. We give in another column the answers of Mr. Clay and Mr. Calhoun, which are models of good taste and good sense. If the two men in the country, probably the best qualified to speak correctly upon this subject, feel called upon to give their opinions with so much caution, it certainly becomes those who can lay no claim to such authority to give their opinions with diffidence if nothing more.

Railroad to Memphis.

The extension of the Georgia railroad to the Tennessee river has already secured the construction of a road from this point to Nashville, from whence it will soon be extended to the Ohio. Another road of nearly equal importance, from the Tennessee river to Memphis, is occupying the attention of the country along the line of the proposed road, and we soon expect to see an organised effort made to secure its construction. It will run through a wealthy section of the south, capable of contributing largely to such a work, which may be expected to receive additional means from the States of Georgia and South Ca-

rolina, who are much interested in securing a connection with the lower Mississsipi. The proper termini of the the roads of these States are the Mississippi and the Ohio, and they will not realize the full extent of their usefulness, till these points are reached:

In connnection with the above, we copy the following letter from the Huntsville Democrat in relation to a route for this road:

The Democrat says "Mr. Jones is a practical man, add well acquainted with the route which he represents as most suitable for the location of that portion of the road referred to:"

BOLIVAR, Ala., Oct., 16, 1849.

Mr. P. Woodson—Dear Sir: I was some time ago appointed by his Excellency, Gov. R. Chapman, a delegate to attend the Railroad Convention at Memphis, Tenn., on the 23d inst., but as sickness in my family prevents my attending the convention, permit me to point out, as I believe, the proper route of a road from Memphis to connect with the east. It is to commence at Memphis and run nearly east by Florence, Athens, Huntsville, Larkinsville, and Bellefonte, up to the Tennessee river, where the Nashville and Chattanooga railroad crosses it. For these reasons, 1st. It is in a line with the Lynchburg and Tennessee railroad, as well as the best point to connect with the Nashville and Chattanooga railroad which connects with the Georgia railroads. 2d. The ground is well adapted for constructing a railroad, there being no serious hill or ridge to cross in the whole distance, so far as my information or knowledge extends. From Athens to the Tennessee river I know the topography well, and much of the balance of the route I have been over. 3d. The road will pass through one of the richest valleys in the United States a distance of a hundred miles, say from Athens to the Tennessee river, thereby insuring a vast amount of freight and a great number of passengers. 4th. It will be a more direct route than any other line which can connect Memphis with the Atlantic cities. 5th. The whole country is anxious for such a road, and with very few exceptions, would give the company that might be formed, the right of way through their lands, as well as take liberally of their stock. 6th. There has never been a case of cholera on the route which has proved so disastrous in the northern and middle parts of Tennessee, thereby insuring, in some degree, the health of passengers. My objections to its connecting with the Nashville and Chattanooga railroad at Nashville is, that it makes the distaece to the Atlantic cities too far, thereby increasing both time and expense; and for the same reason, near Winchester. In both cases the snow and frost would be worse than along the southern side of the Cumberland Mountains; along the route first proposed. And again, because the route up the Tennessee valley would avoid the tunnel and inclined plains, where the giving away of a break would be attended with so much danger of life. Again, by connecting at the Tennessee river, no unfair exactions would be made by the Nashville and Chattanooga railroad, because the river is now navigable at all times from there to Chattanooga, except at the *very lowest* water, and with but little work, the obstructions at the Tumbling Shoals, could be removed, thereby making the navigation good at all times.

Very respectfully, your ob't servant

CHARLES J. JONES.

The New Route from New York to Buffalo.

The New York and Erie railroad is now beginning to realize some of the results claimed for it by its friends, when it should reach the fertile sections of Western New York, and connect itself with the lines of communication in that quarter, so as to open between them and New York the shortest and quickest route. The following, taken from an Ithaca paper, shows the state of the road which is to connect the Erie road with Cayuga Lake. The completion of the Cayuga road will, in connection with the lake, be a virtual extension of the Erie road to Cayuga Bridge. A road is in an almost equal state of forwardness to connect Seneca Lake with the Erie road at Elmira. This lake too is unobstructed by ice during the winter. This last named road will form an additional connection between the Erie road, and the roads running from Albany to Buffalo. As soon, therefore, as the Hudson shall be closed by ice, a greater part of the travel from the west, which now reaches New York by way of Albany, will be brought over the Erie road.

Cayuga and Susquehanna and Liggel's Gap Railroad.—For the gratification of our readers, we have taken the liberty several times during the last two months to refer to the operations of the enterprising company now owning and rebuilding Cayuga and Susquehanna railroad, and have attempted, from what information we could gain, to give the public some idea as to the progress of the work, and the prospects before us.

We are now happy to be able to say, advisedly, that the old Ithaca and Owego—now the Cayuga and Susquehanna railroad—will be open for travel within thirty days. About four miles of New road are now being made. to avoid the inclined plane, and will be opened at the same time with the other line.

The terminus for the present will be about half a mile from the village, and about one mile from the steamboat landing. A plank road is now being made, on which the passengers will be transported from the boat to the railroad depot, in omnibusses, until spring, when the railroad will be extended to the landing.

It is well known that the line of this road is very fine, perhaps the best in the state, with no grades over 21 feet to the mile, and practically straight. The track will be six feet—same guage as the New York and Erie railroad.

This will be one of the most elegantly equipped roads in the United States; and the 28 miles will be run in 45 minutes.

The passengers will be taken from the steamboat and set down at the New York and Erie railroad depot, in Owego, in one hour.

The steamboats on Cayuga lake have been purchased by Col. Scranton, President, and William I. Humphrey, Esq., Secretary of the railroad company, and will hereafter be controlled by the railroad company.

These boats are to be immediately improved and fitted up in the best possible manner for the fall and winter travel, and everything done to render them comfortable and pleasant. It is believed they will be made to run from Cayuga Bridge to Ithaca in two hours and 45 minutes.

It has become a common opinion abroad, that owing to the freezing of the lower end of Cayuga Lake, steamboats could not run to the bridge during the severe winter months. The public may rest assured that arrangements are now being made to overcome any difficulties of this kind that may occur, and that boats will run daily to the bridge the coming winter.

A beautiful boat is to be built and put on the lake early next season that is expected to make her trip through the lake in two hours and fifteen minutes; this will enable passengers leaving Cayuga bridge to reach Owego (69 miles) in three hours and fifteen minutes. The intention now is to run this line to and from the express trains of the Auburn and Rochester and New York and Erie railroads.

No pains will be spared by the company to render this route attractive and popular, as well as pleasant and comfortable. They intend to merit at least a fair share of patronage.

The rates of fare and freight are to be reduced, and arrangements made to receive and discharge freight going to and from the New York and Erie railroad, and Auburn and Rochester railroad at different points on the line between these two roads.

Wanted,

A Second Hand Locomotive, weighing from 10 to 12 tons. It is required that in answer, it will be stated, whether the engine has inside or outside connections—the price of the same delivered at Portland, Maine, and terms of payment expected. Address

VIRGIL D. PANIS,
President Buckfield Branch Railroad,
Portland, Maine.

November 10, 1849. 3t45

NOTICE TO CONTRACTORS.—Office of the Cincinnati, Hamilton and Dayton Railroad Company, Nov. 3d. 1849.

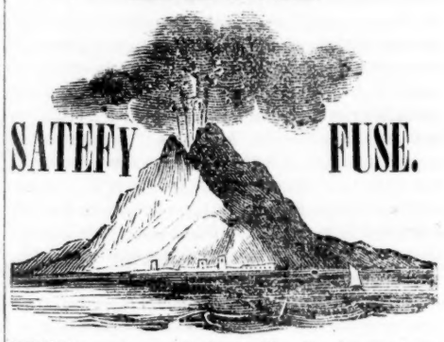
Sealed Proposals will be received at this office until THURSDAY, the 13th day of December next, for the Grading, Masonry and Bridging of the Southern Division of the Cincinnati, Hamilton and Dayton Railroad, extending from the city of Cincinnati to the town of Hamilton, Butler county, a distance of about 25 miles

The work will be ready for inspection in ten days previous to the letting, and all the necessary information will be given by the undersigned and the assistant Engineers.

Proposals to be addressed to S. S. L'Hommedieu, Esq. President of said Company, or to the undersigned. Bidders not known to the President and Directors, or to the undersigned, will be required to give satisfactory testimonials as to character and qualifications.

R. M. SHOEMAKER, Engineer.

ETNA



THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,
Sole Manufacturers,
No. 85 Liberty St.
NEW YORK.

And in the principal cities and towns in the U. States.

☞ The Premium of the AMERICAN INSTITUTE was awarded to the *Etna Safety Fuse* at the late Fair held in this city.

November 3, 1849. 1y

C. W. Bentley & Co,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupyidg but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fillings for Steam, Water, Gas, etc., constantly on hand,

Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,

SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.

Philadelphia, June 16, 1849. 1y25

Norwich Car Manufactory FOR SALE.

WILL BE SOLD at public auction on the premises, on Wednesday, the 2d day of January next, at 10 o'clock A.M., the entire establishment and property of the Norwich Car Manufactory, consisting of

1 Brick, slate roof building, 50 by 150 feet, 2 stories, used for setting up cars, cabinet work, upholstery, etc.
1 Brick, slate roof building, 40 by 190 feet, 1 story, used for blacksmith and machine shop.
1 Brick, slate roof, engine and dry house, 30 by 40.
1 Lumber house.
2 Wood buildings, 50 by 64, and 54 by 120 feet, for painting and finishing cars.
1 Barn, 18 by 28 feet.
1 Wood dwelling house, 21 by 28 feet.
1 Brick block, six tenaments, two stories.
A number of building lots.

Together with all of the machinery, tools and fixtures connected with the same, consisting of—steam engine and boilers, several plaining and sawing machines, turning lathes, boaring, punching, morticing, and a variety of other labor saving machines, constituting as complete and extensive an establishment for the manufactory of Railroad Cars as any in the country, and capable of working one to two hundred hands, and doing a business of $200,000 or more per annum.

It is situated on the Norwich and Worcester Railroad, half a mile from the city of Norwich, at the head of navigation of the River Thames, affording the most desirable facilities for the transportation of cars and materials, and in the immediate vicinity of various and extensive manufacturing and mechanical establishments. It has been in operation about two years, several of the buildings having been completed the present year. The whole, with the exception of the vacant lots, is leased on favorable terms for four years from February next. For further information apply to J. G. W. TRUMBALL, } Trustees
WALTER LESTER. }

October 24, 1849.

To Railroad Companies, etc.

The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Swiiches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to C. LIEBRICH,
46 South 8th St., Philadelphia.

November 3, 1849. 6m*

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by
E. & G. W. BLUNT,
No. 179 Water St., cor. Burling Slip.

New York, May 19, 1849.

To Proprietors of IRON FOUNDRIES.

FINE Ground *Sea Coal Foundry Facing* to mix with moulding sand, causing the sand to peel off the castings easily; *Charcoal Blacking; Lehigh Blacking; and Soapstone Dust; also Black Lead Dust* for facing very nice work, always on hand and for sale by
G. O. ROBERTSON,
303 West 17th St., New York.

November 3, 1849. 1m

To Contractors.

VIRGINIA & TENNESSEE RAILROAD CO.

PROPOSALS will be received until the 22d day of November next, at the Railroad Office, in Lynchburg, for the Graduation and Masonry of 60 miles of the Virginia and Tennessee Railroad, extending from Lynchburg to Salem. The line traverses a region remarkable for its healthy climate and productive soil.

The character of the work is heavy and worthy the attention of contractors; and it will be let in sections of one mile or larger amounts, to suit the wishes of contractors and interest of the company.

The bids must be addressed to the undersigned, and none will be accepted without satisfactory evidence of the responsibility of the bidder.

By order of the Board of Directors.
CHARLES F. M. GARNETT,
Chief Engineer.

TO CONTRACTORS.

SECOND LETTING OF THE MOBILE AND OHIO RAILROAD.

SEALED Proposals will be received at the office of the Company at Mobile, until noon of SATURDAY, the 8th day of December, 1849, for the graduation, masonry, bridging, grubbing and clearing of sixty two miles, and for the manufacture and delivery of Track Timber for seventy miles of the Mobile and Ohio Railroad, beginning at and extending westwardly out of Mobile. Plans, profiles, specifications, &c, will be ready for inspection on and after the 1st day of November. The work will be divided into small sections, and persons bidding can propose for one or more, or for the whole work. Payments will be made monthly, but from 10 to 25 per cent. of the value of the work done will be retained as collateral security until the competion of the contract. The work is to be commenced immediately after the letting, and a reasonable time given for completion.

The seventy miles now advertised extends through the pine woods of Alabama, and over some sand and sand stone ridges—the whole length being as healthy at all seasons as any part of the United States. The work is worthy the attention of Northern and Western contractors, as those from the South.

It is expected that 200 or 250 miles of the route will be put under contract before the completion of the work now advertised for. Testimonials of character and ability to perform the work bid for, will be required of those not personally known to the President or Chief Engineer.

JOHN CHILDE, Chief Engineer.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 23d day of November next, for the construction of a stone dam across James River at Maiden's Adventure Falls, twenty-eight miles above Richmond.

The dam will be about 1100 feet long and 10 feet high.

The work will be paid for in current Bank notes.—Besides the usual reservation of 20 per cent. on the monthly estimates, the Contractor will be required to give ample security, satisfactory to the Board of Directors, for the completion of the work at the time and in the manner specified in the contract.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractor, at the Company's office in Richmond, by the 5th day of November next, on application to the Secretary of the Company.

WALTER GWYNN,
Chief Engineer J. R. & K. Co.

Richmond, October 17, 1849.

To Contractors.

Office of the Columbus and Lake Erie R.R. Co.
Newark, Ohio, October 17, 1849.

SEALED Proposals will be received at this Office until the 30th day of November next, for laying 60 *miles* track with H rail (58 to 60 lbs. per yard weight). The work to be commenced immediately, or not later than December 15th.

Also for furnishing the necessary cast iron chairs for the same.

Proposals are invited for cash payments, and also for the whole or any part in the 7 per cent. bonds of the company. Any information desired will be furnished on application to the undersigned.

GEO. W. PENNEY,
Superintendent, etc,

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

☞ *The above may be had at order at our Car Factory,*

REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS,

1y48

A New Paper for the New Year.

The Subscriber, having met with public favor (which he takes this occasion to acknowledge,) as foreign correspondent, contributor and editor, has now determined, by the advice of friends, *to work for himself*, and carry into effect plans which have been long and carefully considered, for the establishment of a journal in Boston, which will combine the leading features of the best weeklies of the Old and New World. Early in December next, he will commence the publication of

THE AMERICAN SENTINEL,

A General Newspaper and Weekly Review;

To appear once a week, printed with clear new type on substantial white paper, with occasional illustrations, and to be enriched with original articles, from contributors of merit,

—ON—

Political Economy, Biography, The Military, Agriculture, The Fine Arts, Science, Foreign Scenes, El Dorado, Literature, Free Masonry, History, Antiquities, Table Talk, Popular Rights, Romance and Reality, Social life, Mechanics, Finance, Commerce, Poetry, Philosophy, Diplomacy, Travels, The Drama, etc., etc.,

AND ITS DISTINGUISHING FEATURES WILL BE

I. *Perfect Independence;* being influenced by no party organization, and confident that whoever speaks the truth out of a sound heart, will find an echo in public opinion.

II. *Liberality of Sentiment;* combined with manliness of expression on all occasions.

III. *The Regular Employment of Able Contributors;* both at home and abroad, each one of whom will have a separate department unper his charge.

IV. *Freedom from Deceit;* by rejecting all quack medicine and other advertisements calculated to mislead the public. No book will be reviewed until it has been read; no music recommended until it has been heard; no invention eulogized until it has been examined, and no exhibition praised until it has been seen—nor can favor ever be purchased at a stated price per line.

V. *Purity of Style and Expression.* While illustrating the present and the past, earnest endeavors will be made to edify and amuse, but not to pander to vicious tastes by searching into the world's foulest corner for plague blotches, in order to profit by the loathsomeness of the exhibition.

In general, THE AMERICAN SENTINEL will be a high toned Register of passing events, ever ready to defend the honor and interest of the United States, and always on the *qui vive* for novelty, wit and humor. For the first time in his life the proprietor asks public support, pledging himself to give his paper that independent, high toned and popular character which the above outline promises.

☞ The price of the American Sentinel will be two dollars per annum, payable in advance—three copies in one envelope, five dollars. A liberal allowance will be made to agents. BEN: PERLEY POORE.

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

☞ Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the *parallel ruler, plane scales* and *protractor.*

2d. Examples for drawing *plans, sections* and *elevations* of Buildings and Machinery, the mode of drawing elevations from *circular* and *polygonal* plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to *Isometrical drawing*, with 4 plates of examples.

4th. A treatise on *Linear Perspective*, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES.

Published by WM. MINIFIE & CO.,
114 Baltimore St., Baltimore, Md.

Price $3, to be had of all the principal booksellers.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

To Steam Engine Builders.

THE Undersigned offer for sale, *at less than half its cost*, the following *new machinery*, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz:

2 Wrought Iron Cranks, 60 inches from centre to centre.
1 Do. do. Connecting Rod Strap.
2 Do. do. Crank Pins.
1 Eccentric Strap.
1 Diagonal Link with Brasses.
1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.
Sept. 12, 1849.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.
or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849. 20tf

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. G. A. NICOLLS,
Reading, Pa.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.
Jan. 20, 1849.

RAILROAD India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metalic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.
May 24, 1849.

GREAT NORTHERN & SOUTHERN MAIL ROUTE. From New York to Charleston, S. C. daily, via *Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.*

Travellers by this route, leaving New York at 4½ p. m., Philadelphia at 10 p.m., and Baltimore at 6 a.m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, $20 00
" " " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the *Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore* STOCKTON & FALLS.
October, 1849.

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Tucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

E. S. NORRIS.
April 11, 1849.

Engine and Car Works,
PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of $250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery. HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steam boat and Stationary Engines, constantly an hand and for sale by

KENNEDY & GELSTON,
5½ Pine St., New York.
October 27, 1849, 3m

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 40 Wall St., New York.
May 12, 1849. 1m19

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Civil Engineer, Vicksburg, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

BUSINESS CARDS.

Alfred W. Craven,
Chief Engineer Croton Aqueduct, New York.

Walter R. Johnson,
CIVIL AND NINING ENGINEER AND ATtorney for Patents. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

S. W. Hill,
Mining Engineer and Surveyor, Eagle River, Lake Superior.

Starks & Pruyn,
MANUFACTURERS OF ALL KINDS OF
STEAM BOILERS,
52 and 54 Liberty, corner of Pruyn street
Nathan Starks, Special Partner
Wm. F. Pruyn, ALBANY R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters Bridge and Roof Bolts, Heavy Jobbing and Forging of all kinds.
☞ For particularss ee Adv. in another column.

J. A. Burdett,
BLACKSMITH,
No. 176 Chambers street,
(*Between Greenwich and Washington,*)
NEW YORK.
Quarry Sledges and Hammers, constantly on hand and made to order, & warranted. Forger or all kinds of Ship, Steamboat and Bridge Work. Also, Forging to Draft or Pattern.
Screw Bolts, Dock Bolts and Spikes. 1m45

To Engineers and Surveyors.
E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

F. S. & S. A. Martine,
IMPORTERS and Jobbers of Railroad Car and Carriage Linings, Curtain materials, Plushes, etc.,
122 William Street,
Ferdin'd S. Martine. N. York. Steph. A. Martine.
3-4 and 6-4 Worsted Damasks, 3-4 and 6-4 Union Damasks, Moreens, Rattinetts, Cloths, Silk and Cotton Velvets, English Buntings, Plushes, etc.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.
AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.
July, 27, 1849.

James Laurie, *Civil Engineer,*
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.
Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.
October 14, 1848. 6m*

James Herron, *Civil Engineer,*
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.
Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,
Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.
May 16, 1849.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.
Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.
May 26, 1849.

Eaton, Gilbert & Co.,
Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,
THOMAS & COLLINS,
130 Quay Street, Albany.

To Railroad & Navigation Cos.
MR. M. BUTT HEWSON, *Civil Engineer,* offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.
Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
No. 1 New street, New York.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED —'Potomac' and other good brands of Pig Iron.

IRON.

Railroad Iron.
1600 Tons, weighing 60½ lbs. per yard.
185 " " 57½ "
580 " " 53 "
of the latest and most approved patterns. For sale by
BOORMAN, JOHNSTON & CO.,
119 Greenwich street.
New York, Oct. 13, 1849.

Railroad Iron.
THE Undersigned have on hand, ready for immediate delivery, various patterns of Iron Rails, of best English make, aud manufactured in conformity with special specifications.
They offer also to import and contract to deliver ahead—on favorable terms.
DAVIS, BROOKS, & CO.,
68 Broad street.
New York, Oct. 11, 1849.
☞ Drawings and Patterns of the most approved Rail—and specifications of quality and make of same, are on hand at their office, for examination of parties who may desire to inspect the same. D., B. & Co.
Oct. 11, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, *Civil Engineer,*
Pittsburgh, Pa.
These *Ropes* are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Railroad Iron.
THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.
They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. ILLIUS & MAKIN.
41 Broad street.
March 29 1849. 3m.13

Glendon Refined Iron.
Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "
Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for sale by GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.
Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.— The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.
JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Bro Ier, Baltimore, Md.

LAP—WELDED
WROUGHT IRON TUBES
FOR
TUBULAR BOILERS,
FROM 1 1-2 TO 8 INCHES DIAMETER.
These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers
THOMAS PROSSER,
Patentee.
28 Platt street, New York

Railroad Iron.
THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO.,
22 South William street,
February 3, 1849. New York.

Iron Store.
THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.
MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849. 1y33

Railroad Iron.
THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, *President*
Troy, N.Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N.Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.
November 6, 1848.

Railroad Iron.
THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phœnix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehannah river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.
Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.
REEVES, BUCK & CO.,
45 North Water St., Philadelphia.
March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for
Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,
Slide, Hand or Chuck Lathes,
Machinery for cutting all kinds of Gearing.
Hydraulic, Tobacco and other Presses,
Car and Locomotive patent Ring Wheels, warranted,
Bridge and Mill-Castings of every description,
Gas and Water Pipes of all sizes, warranted,
Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

☞Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

☞ Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.

FOR SALE,

300	Tons	A 1, Iron Dale Foundry Iron.
100	"	1, " " "
100	"	2, " " "
100	"	" Forge "
400	"	Wilkesbarre " "
100	"	"Roaring Run" Foundry Iron.
300	"	Fort " "
50	"	Catoctin " "
250	"	Chikiswalungo " "
50	"	"Columbia" "chilling" iron, a very superior article for car wheels.
75	"	"Columbia" refined boiler blooms.
30	"	1 x ¼ Slit iron.
50	"	Best Penna. boiler iron.
50	"	"Puddled" "
50	"	Bagnall & Sons refined bar iron.
50	"	Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,
New York. 64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,

Offer for sale, *Hot Blast* Charcoal *Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces; Cold Blast* Charcoal Pig Iron from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra* strength; also *Boiler* and *Flue Iron* from the mills of Edge & Hilles in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled* and *Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and Rich & Cos. New York Salamander Iron Chests.

Baltimore, June 14, 1849. 6 mos

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1¼ to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,
12 Platt street, New York.

JOB CUTLER, *Patentee.*

☞ These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, *Agents.*
17 Burling Slip, New York.

October 30. 1848.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

150	tons	No. 1 Boonton Foundry Pig Iron.	
100	"	No. 2 do.	do.
300	"	Nos. 2 & 3 Forge do.	do.
100	"	No. 2 Glendon do.	do.
140	"	Nos. 2 & 3 Lehigh Crane do	do.
100	"	No. 1 Pompton Charcoal do.	
100	"	New-Jersey Blooms	
50	"	New-Jersey Faggoting Iron, for shafts .	

Best Bars, ¼ to 4 inch by ¼ to 1 inch thick.
Do do Rounds and Squares, ⅜ to 3 inch.
Rounds and Squares, 3-16 to 1 inch.
Half Rounds, ½ to 1 in. Ovals & Half Ovals ½ to 1¼ in.
Bands, 1¼ to 4 inch. Hoops, ⅜ to 2 inch.
Trunk Hoops, ⅜ to 1¼ in. Horse Shoe & Nut Iron.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

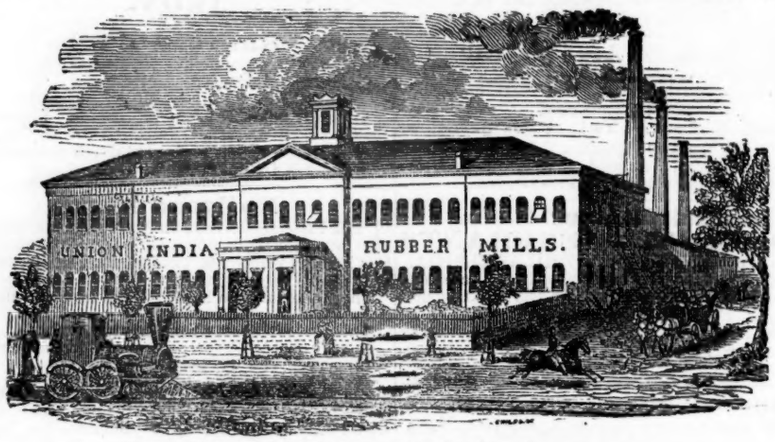
SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1¼ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, *Agent,*
Albany Iron and Nail Works.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

☞ HEAD QUARTERS FOR RUBBER GOODS. ☜



The Union India Rubber Company,

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF
GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse,
NO. 19 NASSAU STREET, NEW YORK.

Articles which this Company has the exclusive right to make comprise in part

Beds,	Overcoats,	Life Preservers,	Mail Bags,	Camp Blankets,
Pillows,	Leggins,	Boat Floats,	Breast Pumps,	Travelling Bags,
Cushions,	Syringes,	Souwesters,	Saddle Bags,	Wading Boots,
Caps,	Canteens,	Gun Cases,	Clothing of all kinds,	Horse Covers,
Tents,	Buoys,	Portable Boats,	Carriage Cloth, assor.	Piano Forte Covers,
Bottles,	Maps,	Horse Fenders,	Hospital Sheeting,	Railroad Gum,
Tubs,	Sheet Gum,	Water Tanks,	Mattrass Covers,	Hose, all kinds,
Caps,	Tarpaulins,	Army Goods,	Bathing Caps,	Shower Baths,
Pants,	Life Jackets,	Navy Goods,	Baptismal Pants,	Chest Expanders.

Together with *all new applications of the Patent Rubber*, which with Boots and Shoes, Packing, Machine Belting, Suspenders, Gloves and Mittins, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc., will be sold to the Trade at Factory prices.

*** All orders for special articles to be manufactured, should be accopanied with full descriptions and drawings.

October 20, 1849.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and *warranted to perform well*. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price $1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.

September 6, 1849.

Utica French Burr Mill Stone Manufactory.

THE undersigned, successors to Messrs. M. Hart and Son, in the above establishment, are now prepared to furnish French Burr Mill Stones of best quality and greatly improved workmanship and finish, together with best quality Bolting Cloths, Screen Wire, Hoisting Screws, Lighter Screws, Dansells and Mill Pecks.

Our Mr. Munson who is a practical Miller and Mill Wright, has recently invented and patented a machine on which the Mill Stone, after it is blocked up, is suspended upon its centre, where it is balanced in the course of filling up and finishing, instead of filling up the same without the means of testing the accuracy of its balance, leaving that to be done by the Mill Wright (as is usually the case) in hanging the Stone for actual use in the mill.

In order that the great superiority of Mill Stones finished in this way over all others, may be seen at once, a brief description of the machine and manner of finishing, is herewith given.

An important part of the machine is a heavy circular face plate, which is hung and balanced on a pivot or spindle. This plate has a flange near the outer edge on the under side, which rests on four friction rollers, so that when put in motion it runs perfectly smooth and true, around the opening or eye in the centre of the plate there is raised a flange which receives a hollow cone for forming the eye of the stone. This cone stands perfectly true with the plate, which plate is raised or lowered with a lighter screw. The manner of finishing a stone is by placing it upon the plate and centre it. The skirt is then coated with plaster and turned off perfectly true. The band is then put on hot. This band is wide, (with iron tubes fitted in for the pin holes) and extends above the edge of the stone in its unfinished state, leaving a vacancy between the eye and the band, which is to be filled up in the finishing. It is in this filling up and finishing of the stone that the balancing of it is performed. The means being here afforded as described of raising the stone free from the friction rollers and holding it suspended on the spindle or cock-head, and in that condition observing its balance when at rest or by application of motive power, communicating to the stone a swift motion, and in that condition by observing its balance it can very accurately be ascertained which side of the stone preponderates and where to apply the heaviest filling. This test is strictly observed until the necessary thickness is obtained. When the filling is completed a coat of plaster is put on and the top is nicely turned off, and the stone is complete. During the whole process the means are afforded of testing its balance both at rest and in motion. So that when the process of construction is complete and the mill stone finished, it is not only constructed otherwise favorable to the perfection of the stone, but the stone is also throughly balanced.

All of our stock will be selected and manufactured under the direction and superintendence of our Mr. Munson, which together with his long experience in the business will be a sufficient guaranty that the high reputation of this establishment will be fully sustained.

Confident that we can offer greater inducements to purchasers of Mill Stones, Bolting Cloths etc., than any other establishment in this country, a share of public patronage is respectfully solicited.

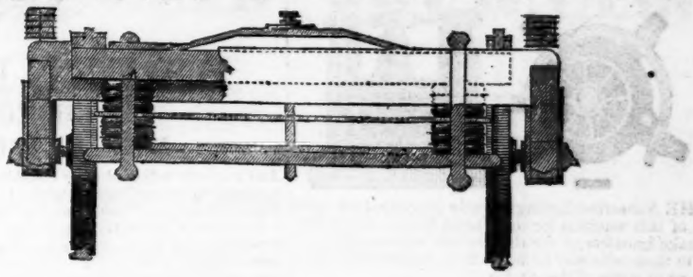
HART & MUNSON,

Utica N. Y. Sep. 1849.

PATENT INDIA RUBBER STEAM PACKING. This article has been sufficiently long in use to prove its superiority over every other article. A complete assortment of the various descriptions and sizes suitable for Marine Locomotive and Stationery Engines; Boilers, Steam pipes, Ship joints; Valve stem and Piston rod boxes; Piston and Air Pumps; delivery and foot valves, &c., &c., constantly on hand, and for sale, in quantities to suit applicants by the manufacturer and patentee, who will give every information regarding its properties, mode of use, &c., &c., at the warehouse, 98 Broadway.

JOHN GREACEN, JR.,
Opposite Trinity Church Yard.

FULLER'S PATENT
INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorised to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alledges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against one railroad company for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are G. M. KNEVITT, 38 Broadway, N. York, General Agent for the U. S.: and JAS. LEE & Co., 18 India Wharf, Boston. JOHN THORNLEY, Chestnut st., Philad.

TO LOCOMOTIVE AND MARINE ENGINE Boiler Builders. Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine, and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; hollow Pistons for Pumps of Steam Engines etc. Manufactured and for sale by

MORRIS, TASKER & MORRIS,
Warehouse S. E. corner 3d and Walnut streets,
Philadelphia.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same.

August 4th, 1849. M. M. White, Agent,
au7tf No. 74 Broadway, New York.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

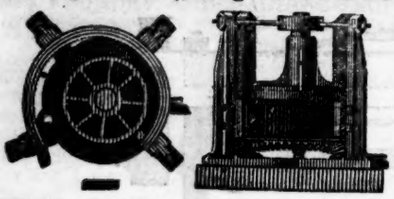
To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burtt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.
Albany, August 18, 1849.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phœnixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery *for making Spikes*, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNdersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNdersigned, the *Original Inventor* of the *Plate Wheel* with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country. A. T.

Kensington, Philadelphia Co.,
March 12, 1848.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

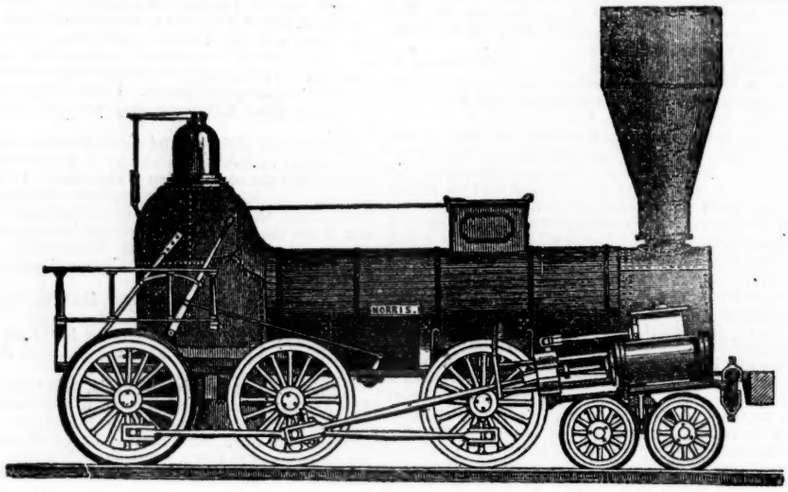
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds —including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

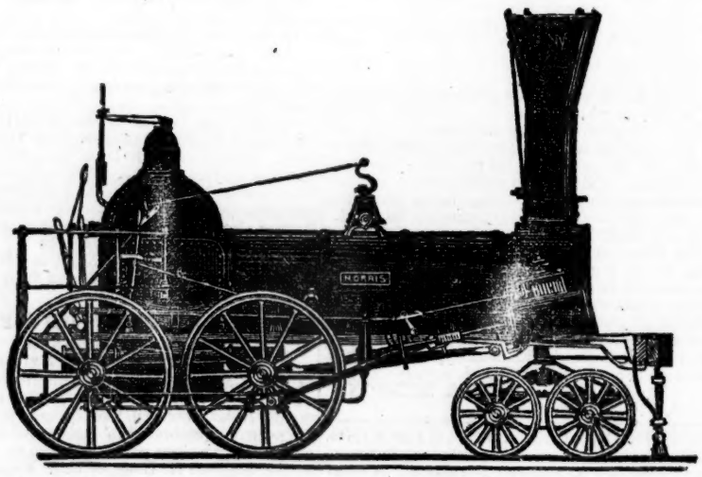
DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,





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Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

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